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ISSUE 40 | AUGUST 2015 | TECHLIFER TECHLIFER TABLET EDITION IN APPLE NEWSSTAND & GOOGLE PLAY

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EDITORIAL

UNFETTERED SPECULATION



[TRANSFORMATIVE]

A smarter smartphone starts with you

TECHLIFE'S EDITOR RECKONS YOUR SMARTPHONE NEEDS KINDNESS, LOVE AND UNDERSTANDING TOO.

[DAN GARDINER]

LIKE LIFE IN general, there's only one constant when it comes to smartphones — and that's change. And honestly, sometimes it can be hard to keep up. Yearly OS updates combined with a multitude of new apps — many of them free — mean there's a lot to stay on top of. Of course, if you're reading *TechLife* I'm assuming that, like us, you know that keeping up is half the fun! But still, it doesn't hurt to have it all written down in one place.

In that vein, this month, we've taken a stab at comprehensively rounding up all the ways you can improve your smartphone, from small things like adding a neat accessory (like a tough case, backup charger or Bluetooth speaker) or installing and using the niftiest apps, to more advanced techniques like getting in and changing settings to customise and modify your phone to better suit how you use it. All those parts can add up to completely transform the way you use your device.

Of course, a big part of improving your

smartphone (or any bit of tech, really) is actually just about getting the know-how — in other words, it's less about hacking your phone and more about hacking yourself.

While the best tech is often said to be the stuff that's the most user-friendly, a lot of the time it's about meeting your devices halfway.

And on the topic of hacks, if you're an AV nut then I'd like to point you in the direction of this month's Home AV masterclass. Simon Chester's written a somewhat illuminating article on the topic of speaker and headphone burn-in — a somewhat contentious enthusiast 'trick' that involves running-in your new kit by playing audio through it for a number of hours or days before you start using it. Simon's looked into whether or not there's really any science behind it, and while I won't give away too much, I will say that if you believe in the process you may want to prepare to have your mind (not ears) blown. ■



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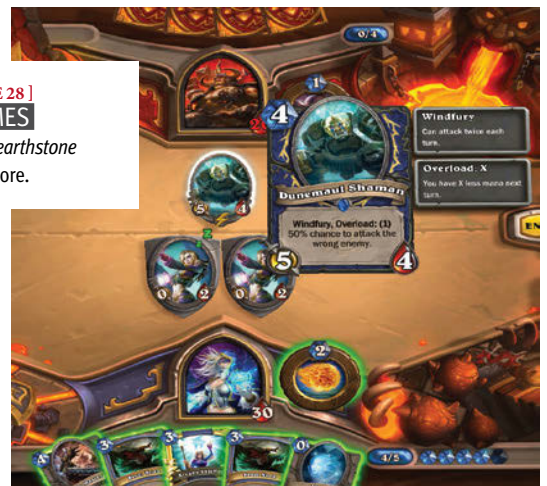
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*Splatoon, Hearthstone
and more.*

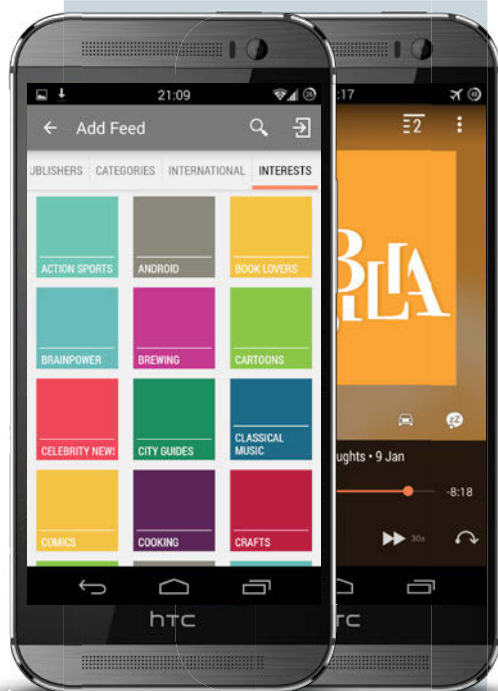




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[DOWNLOADS]

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ASHAMPOO MUSIC STUDIO 4, ABELSOFT BACKUP 2015 AND 1.ABC.NET FILE DIVIDER



01

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02

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03

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THE WALL

GUFF AND STUFF

[COME ON, HAVE YOUR SAY!]

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Hide my location, not my age

I've been reading *TechLife* for some time now, and have a question about VPNs. I read your recent VPN article very carefully, and you mentioned that there may be a free option instead of paying a monthly fee. If this is so can you send me that link? I'm on a pension and I do a lot on my laptop. Keep up the great work with your mag, it gives good tips for a novice like me who is self taught and 71 going strong!

[LEN]

Ed reply: Thanks for the email and the kind words about the mag. There are a couple of options when it comes to free VPNs, but the big caveat is that they're often quite slow and can therefore be frustrating to use.

For changing your location (to watch overseas streaming services) we've previously recommended the Hola browser plugin, but the security of it has recently been called into question, so we'd avoid it in future. For some alternatives, see the box on page 91 of this issue.

If you're after anonymous browsing, the Tor Project has a dedicated browser (based on Firefox) which you can download from the Tor site: www.torproject.org/



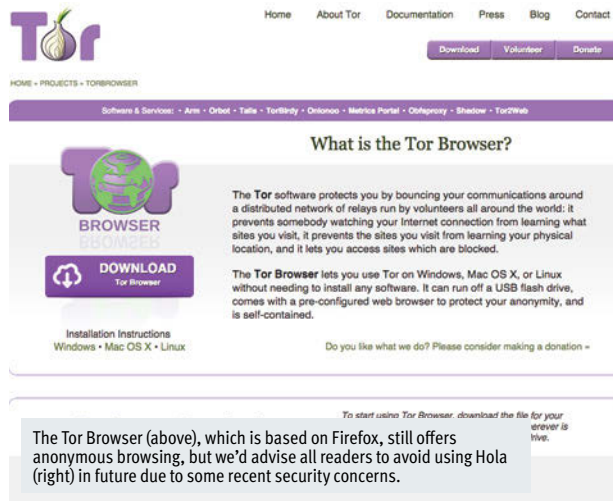
Not so hack proof

This email refers to the recent Hack Proof Issue. I could do with using a password manager so read your article with keen interest. I have also read in so many places about hackers getting into cloud services and stealing stuff and a lot of major corporations have been subject to hacking attempts.

Given this state of affairs, I thought you very nonchalantly brushed off the risk of LastPass being hacked and your data stolen there. I'd be keen to understand why you brushed that off so lightly when surely given the nature of its business, it would be an attractive target. Is there something there we are not knowing about?

[MARK]

Ed reply: Basically all IT security companies are constantly being targeted by hackers, and LastPass is definitely on their list. The company has actually been hacked twice now — once in 2011, and co-incidentally, in mid 2015 while we were producing this issue of TechLife. What's important to realise is



that neither of these hacks accessed the critical data stored by its services: individual users' password databases. And in both instances, LastPass was open and honest about what data was accessed and offered its users clear advice on what to do (which, in both cases, only involved users being advised to change their master passwords, not the passwords for individual services).

As far as we're aware, no hacker has ever managed to gain access to the individual user password databases on any cloud-based password manager service, LastPass or otherwise. That's not to suggest it's impossible — so yes, there is always some risk of this. But then, we'd argue that not using a password manager is a much bigger risk when it comes to your personal online security.



Windows 10 upgrade questions

With having just completed a factory reset of my ASUS Windows 8.1 tablet — I have some questions/concerns about this process going forward with Windows 10 as its about to become available to Windows 7 and 8 licensed users.

Although I was running Windows 8.1, the factory reset put my OS back to Windows 8 needing all the updates to be reinstalled again before re-downloading Windows 8.1. I know there is a lesser clean up option but I was after a factory reset to start from scratch again for all drivers etc.

My question is, if I do a Windows 8.1 clean build with media — can I use the Windows 8 Key? (Where can I get 8.1 OS s/w as new PCs/



Tablets are not shipped with media) I assume any future factory resets would then put this back to 8.1?

The Windows 7/8.1 to Windows 10 — is this is update like Window 8 to 8.1 in the shop only?

And/or will the media be made available to all (via download) and a clean install possible using Windows 7/8/8.1 Keys?

As there are many different OS versions OEM/Retail how will this be handled?

Finally what's the best app to recover the Windows Key as my tablet doesn't have a sticker on it?

[PAUL HYLES]

Ed reply: OK, lets deal with these one by one. First, you can't generally use an OEM Windows 8 key (which is what your ASUS tablet uses) on any other version of Windows — it's specifically tied to the manufacturer edition used on your device.

Second, there are still a lot of unanswered questions about the upgrade to Windows 10, but our understanding is that it will be available via download to all users. It's unclear whether Microsoft will offer the option of a clean install initially, but word is that once you have an activated copy of Windows 10 on a PC, you'll be able to clean install it thereafter without any cost.

You most-likely won't be asked for your Windows product key to upgrade to Windows 10 (the installer will check your current version of Windows) but in case you do need it, we'd recommend using the open source Enchanted Keyfinder from sourceforge.net/projects/ekeyfinder/. ■

HOTSPOT

YOUR GUIDE TO HOT NEW TECH



[LIFE'S GOOD IN LEATHER]

Leather legend

LG'S G4 COMBINES TECHNOLOGY AND LEATHER INTO ONE SLEEK PACKAGE.

[STEPHEN LAMBRECHTS AND GARETH BEAVIS.]

WITH THE MAJORITY of today's smartphones largely imitating each other in terms of design — embracing unibody metal frames, large screens, similar button placements and even colouring — it stands to reason that one of the big hitters in the industry could make a splash with a smartphone unlike any other that's currently on the market. That is exactly what LG has done with its latest flagship smartphone, the LG G4. It's an elegant and attractive phone with a detachable leather backing that makes it instantly recognisable amongst the increasingly identical horde.

SLEEK AND SUPPLE

The LG G4 does a few things differently though. This time the brand has gone for some elements the user will actually want: longer battery life, improved camera and upgraded screen, and combined them with a slightly outlandish design: covering the thing in a leather coat that's certainly something the Aussie market hasn't seen yet.

There are two options on offer — the first is a leather back, and the one that LG is pushing as the 'premium' model, and the latter is the polycarbonate version with a diamond effect. The G4 is all about being lightweight and ergonomic in the hand. The rear cover bulges out a little to

curve into the palm, which is designed to make it nicer to hold and allow for a greater battery space (3000mAh, compared to the 2500mAh on offer in the Galaxy S6, for instance).

One of the big features LG is making a big deal of is the fact said battery is removable, which explains the need for a plastic cover (easier to remove and less likely to break than a metal choice). Making a battery removable does have the added benefit of letting you change it out if the power pack starts playing up a year and a half into your two year contract, but it comes at the cost of not having a unibody design like its competitors. That said, opting for a detachable plastic cover offers the G4 a point of difference, and who are we to argue when it feels this smooth and luxurious?

BIG AND BOLD

The phone itself is large without being unwieldy. Yes, we've become used to having massive phones in our hands, but where the LG G3 was just on the edge of being too big, this 5.5-inch screened device has been curved and hewn to make it a little less sharp to use in the hand. You'll still need to wriggle it around to use it day to day, but given the trade-off gives you a phenomenal QHD screen, it's worth it.



LG G4

\$929

www.lg.com.au

CRITICAL SPECS

Android 5.1, 5.5-inch LCD display at 2,560 x 1,440-pixels, 1.8GHz hexa-core Qualcomm Snapdragon 808 CPU CPU, Adreno 418 GPU, 3 GB RAM, 32 B internal storage, microSD card slot (up to 2TB), 16MP rear camera (f/1.8 aperture), 8MP front camera (f/2.0 aperture), NFC, 802.11 a/b/g/n/ac Wi-Fi, 155g



"THAT INCLUDES RAW SUPPORT, WHICH IS BAKED INTO ANDROID THESE DAYS AND WILL ATTRACT SOME OF THE MORE PHOTOGRAPHICALLY-MINDED AMONG THE SMARTPHONE COMMUNITY."

That display is slightly curved, but we've not seen a great deal of use for that in general use, aside from allowing the handset to contour with your face a little more.

The display on the LG G4 is simply mind-blowing. While LG has a rich heritage in making impressive screens, it didn't use that power with the G3, making a darker screen that ticked the headline-making box of being the highest-res on the market.

This time around, the difference is quantum. Literally. The new Quantum IPS display on the LG G4 is really, really nice to look at, and vies for top spot with Samsung as the best on the market. At 5.5-inches, it's not the easiest to navigate around with one hand... in fact, it's impossible. But what you get in return is a large display that displays everything amazingly well. The contrast ratio is the part that impresses the most — it's almost as deep and rich as the Samsung Super AMOLED offering, which is really cool to see from an LCD.

UNIQUELY LG

The other cool thing about the display is the 'Knock On' effect that allows you to wake the phone from sleep. It's really useful as it prevents the need of hunting around on the back of the phone for the power button. It's such an intuitive way of opening the phone that I constantly do it on other handsets, irritated

when it doesn't happen. It's not super accurate, sometimes needing a second to 'rest' before opening up, and the 'Knock Code' (meant to replace the PIN or swipe code method of security) is too fallible to be considered a really useful tool.

The rear power and volume buttons are present again — one of LG's favourite design tweaks — meaning that the phone looks sleek and buttonless when looked at front-on. Those buttons are easy to find, have a pleasant ridged effect and are distinct from other elements of the phone.

Admittedly, we've grown fond of the thumbprint reading technology found in the Samsung Galaxy S6 and recent iPhone models, so going back to more traditional methods of unlocking with the LG G4 feels like taking a step back in time.

WHY DON'T YA TAKE A PICTURE?

LG's making a big deal about the camera prowess of the LG G4, and rightly so: if you're going to release a new flagship phone, the screen, design, battery and camera should be the elements you get right before adding any bells and whistles on top.

The specs make for salivating reading: there's a 16MP camera on the rear, and it's fused with an f1.8 aperture that is designed to deliver spectacular low-light ability. On top of that LG

has added in a huge amount of control to the camera, allowing users to choose the settings for pretty much any area of the snapper they wish to play with.

That includes RAW support, which is baked into Android these days and will attract some of the more photographically-minded among the smartphone community.

However, there's the necessary 'Auto' and 'Simple' modes that will let you just take snaps as and when you want to, getting the best picture you can without having to mess around with the settings. LG's also touting the fact its camera loads in 0.6 seconds — coincidentally faster than Samsung's 0.7 second opening speed on the Galaxy S6.

In practice, the LG G4 is an accomplished camera, and up there with the best we've tested. The Samsung Galaxy S6 and iPhone 6 both offer phenomenal pictures just by framing and tapping, and LG probably slips the G4 just in between these two in terms of picture quality.

NOT THE SPEEDIEST

In our benchmark tests, the LG G4 performed quite admirably, but it's a little behind other flagships. In overall terms, it's about on par with the Galaxy Note 4 which, it's worth noting, is now around 6 months old. It's outperformed by Samsung's new octa-core chip in the Galaxy S6 and S6 Edge, and the HTC One M9 was slightly ahead too. This is by no means a slow device and it'll handle anything you can throw at it — although if benchmark bragging rights matter to you, there are faster options.

The LG G4's battery life is also impressive, outperforming most other Android devices (Galaxy Note 4 notwithstanding) with a streaming-video result of 9:36hr; a good hour and a half above the average. However, it failed to take the battery-life crown from the iPhone 6 and 6 Plus, which both lasted over 10 hours in that test. But when you add in the ability to switch the G4's battery out for a spare, you shouldn't find yourself running into too many flat battery problems.

WHERE IT EXCELS

The LG G4 is a one-of-a-kind device, making it unique in a smartphone market that's mostly content with imitation rather than originality. Its beautifully crafted leather backing and wonderful stitching gives the phone a soft, organic feel. This lends a high-quality sense of elegance to the handset, without losing its personality. It ranks in the upper tiers in terms of performance, and its camera is one of the best to grace a smartphone. Sexy and sophisticated, it's sure to turn a few heads. ■



[CHINESE WHISPERS] BIGGEST HACK IN HISTORY

MILLIONS OF DETAILS LEAKED ON US GOVERNMENT EMPLOYEES

If you thought the recent Sony Pictures hack was the biggest in recorded history, think again — the US government has disclosed details of a massive hacking breach on government computer systems which saw information stolen about every single federal worker, both past and present.

David Cox, president of the American Federation of Federal Employees, has revealed that targets involved active non-military federal employees, former employees and even retirees who've worked at federal agencies. Cox has called the hack a "cyber security failure that is absolutely indefensible and outrageous," openly criticising the Office of

Personnel and Management for not providing suitable encryption.

"Every person's Social Security Number, military records, veterans' status information, address, birth date, job and pay history, health insurance, life insurance and pension information" was stolen in the attack, says Cox.

The FBI is currently investigating the attack, in which China has been implicated. It has been estimated that over 4 million federal workers have had their information stolen in the attack.

[STEPHEN LAMBRECHTS]

[PAY ATTENTION] TECHNOLOGY IS SHORTENING OUR ATTENTION SPANS

BUT WAIT — THAT MIGHT NOT ACTUALLY BE SUCH A BAD THING.

Microsoft recently released the results of a study that found Canadian's attention spans were significantly reducing. Although the study was designed for use in creating more effective marketing campaigns, some interesting results about the effect of the digital world emerge from the research.

The report notes that between 2000 and 2013, the average human attention dipped from 12 seconds down to 8 — which is more brief than what we commonly understand the attention span of a goldfish to be. The study also noted that young adults (aged 18-24) had picked up a variety of new habits — such as checking a smartphone when idle, bored or just before bed, and watching more 'catch up' internet-based TV than live TV — but that these weren't common in older generations (those over 65). However, it seems that binge-watching TV shows and 'double screening' — or using two devices at the same time, like checking Facebook on your smartphone while watching TV — were a new common practice for all ages.

Long-term attention capacities were found to reduce significantly in those who interacted with technology more regularly, but the same group was also found to be better at short bursts of intense focus. Not only this, but the study suggested the brain is actually more adept at retaining information from these short bursts, potentially making it more efficient overall. High-level consumers of digital technology were also found to multitask better and prioritise more effectively. So yes, our digital lives are dramatically changing how we interact with the world — but that isn't necessarily for the worse. For the full report, head to tinyurl.com/TLA40-Atten.

[JOEL BURGESS]



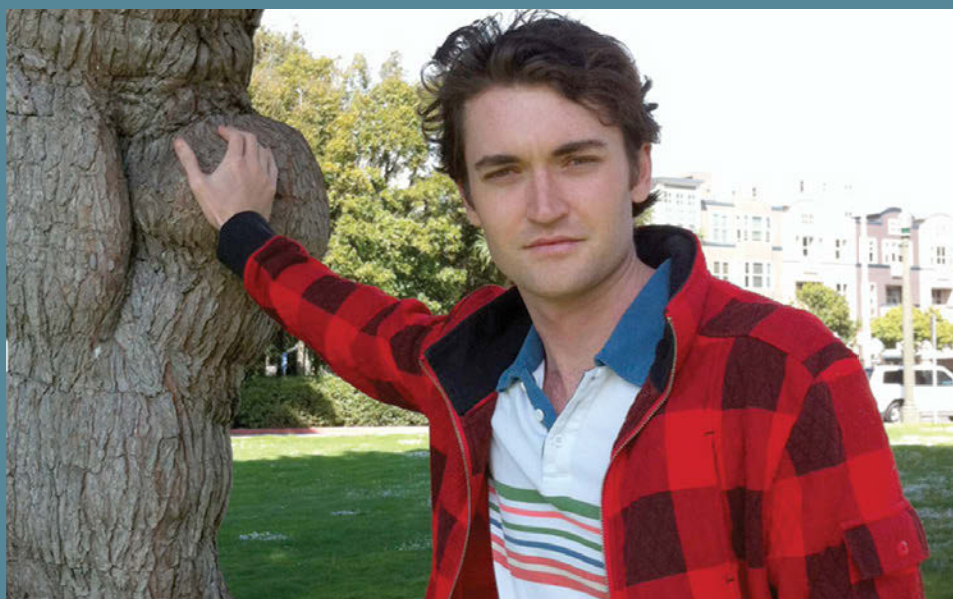
[VR]

Oculus reveals final Rift design

WILL SHIP WITH XBOX ONE CONTROLLER

AFTER AN AGONISING three year wait, the Oculus Rift's final version has been revealed at Oculus' pre-E3 event this year, with the company stating that it will be available to consumers in the first quarter of 2016. The question of what the Oculus would use as a controller has been speculated over for quite some time now, and now we finally have an answer: Oculus has partnered with Microsoft to include an Xbox One wireless controller with every Oculus Rift unit. Xbox One owners will also be able to stream games to the Oculus Rift via Windows 10, though don't expect a true virtual reality experience. While plenty of announcements were made at the event, Oculus kept pricing information for the unit to itself. The company however did keep one final surprise for the end of the show, revealing a newly developed (and completely unique looking) 'Oculus Touch' controller, which comes in two parts and can be used instead of the Xbox One controller.

[STEPHEN LAMBRECHTS]



[END OF THE ROAD]

Silk Road founder sentenced to life in prison

BITCOINS WON'T SAVE YOU IN THE SLAMMER

ROSS ULBRICHT, BETTER known as the man behind the infamous darknet drug marketplace Silk Road, has been sentenced to life in prison without the possibility of parole by a federal judge.

31-year-old Ulbricht, who ran under the pseudonym Dread Pirate Roberts, was convicted of seven felonies, including computer-hacking, narcotics-trafficking conspiracy, trafficking drugs on the internet, running a continuing criminal enterprise, money-laundering and the attempted murder of six people.

Ulbricht had originally pleaded for

leniency in a letter to US Judge Katherine Forrest, which said "even now I understand what a terrible mistake I made." He went on to say, "I've had my youth, and I know you must take away my middle years, but please leave me my old age."

The judge also ordered Ulbricht to forfeit US\$184 million dollars. It is estimated that illegal drug transactions raked in over US\$1.2 billion on Silk Road.

Ulbricht reportedly cried as the parents of his drug overdose victims spoke before his sentencing.

[STEPHEN LAMBRECHTS]

[LOCK DOWNS]

GREEN LIGHT FOR WEB SITE BLOCKING IN AUSTRALIA

'WHACK-A-MOLE' WEB SITE FILTER ALMOST LAW.

Laws for blocking web sites that are associated with copyright infringement have taken another step towards becoming a reality in Australia, after the federal parliamentary committee responsible for the oversight of the bill gave it the thumbs-up, with only a few minor amendments.

In the June issue of *TechLife*, we flagged the concerns from advocacy groups about the legislation being broad enough to theoretically encompass the homepages of legitimate VPN businesses, but there was no redaction of these specific clauses in the legislation, nor was there any mention of the implications for VPNs by the parliamentary committee.

The laws are designed to give TV and movie rights holders the power to request blocks against web sites that facilitate copyright infringement, but the committee used the success of these laws in Singapore and the UK to justify their decision. However, no web sites have ever been blocked under the scheme in Singapore, and despite the laws, according to web site TorrentFreak the UK managed to rack up the highest proportion of illegal downloads of four leaked *Game of Thrones* episodes back in April.

Fortunately, the committee did recommend the government review its effectiveness after 2 years.

[JOEL BURGESS]



[BLIP]

L'OREAL 3D-PRINTS LIVING HUMAN SKIN

FABRICATING THE LARGEST HUMAN ORGAN IN THE NAME OF FASHION.

French cosmetics company L'Oreal has been growing its own human skin for product testing since the 80s, with a 60-strong lab team pumping out 100,000 skin samples — about 5 square meters — per annum. But the existing labour intensive process is about to be revolutionised by a joint venture with 3D bioprinting company Organovo, which plans to embed skin cells into a printed lattice of hydrogel support that will allow significantly faster skin production.

[JOEL BURGESS]

[BLIP]

UK THIEVES USE DRONES TO CASE TARGETS

DRONES MAKING ENGLISH AIRSPACE A WILD WEST FRONTIER.

A Constabulary in Suffolk has confirmed that it's investigated at least one instance of a camera-mounted-drone being used to identify and scope potential burglary targets. Though the usefulness of a drone in illegal activities like this should be fairly apparent, a report by the University Birmingham Policy Commission has also sternly warned that, "They [drones] are the ideal lookouts for burglars, train robbers, and poachers."

[JOEL BURGESS]

[BLIP]

WINDOWS 10 OFFICIALLY LAUNCHING LATE JULY

AMD CEO LISA SU'S CRYSTAL BALL WAS ACCURATE.

Its official: Windows 10 will be available globally from the 29th of July, with a free upgrade offer letting users running Windows 7 and 8.1 jump to the new OS sans-fees until July 2016. If you're running either of the aforementioned OSs, you can now 'reserve' your copy of Windows 10 by clicking an icon in the bottom right dashboard of the desktop, which will appear provided you have Automatic Updates enabled.

[JOEL BURGESS]

**HP SPECTRE X360**

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as tested, \$2,100
www.hp.com/au

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HD Graphics 5500, 8GB
DDR3-1600, 256GB SSD,
3 x USB 3.0; HDMI, mini
DisplayPort, headphone/
microphone combo,
802.11ac, Full HD WVA
Webcam.



[TRANSFORMED]

Spectre spectacular

HP'S BUILT A SUBLIMELY THIN 2-IN-1 LAPTOP THAT'S ALMOST PERFECT.

[KEVIN LEE]

IF IT TRANSFORMS, it'll probably look ugly. This is basically the precedent that has been set by anything that can change from one form to another, from Transformers toys to even real-life amphibious and flying cars. This hasn't been more true than with 2-in-1 laptops, which for the most part have failed to gracefully walk the line between laptop and tablet.

The HP Spectre x360 might be the first transforming laptop to finally strike the perfect balance. Unlike most other hybrid notebooks, this 13.3-inch machine looks like any regular, garden variety laptop. But in one quick and smooth motion, you can flip the screen back 360° to turn it into a full-on Windows 8.1 tablet.

If Lenovo and Apple ever got together to make a baby, it would be this. That's not meant as a derogatory comparison either. HP has blended the best elements of the MacBook Air's aluminium body with the rotating hinges from Lenovo's Yoga series of convertible machines to make one gorgeous computing device. The outside shell of the Spectre x360 is wholly minimalistic with almost no embellishments on its plain, anodized aluminium chassis and it's marvellously thin at only 16mm thick. But while there's no doubt this is one of the smallest 2-in-1 hybrid laptops ever made, the weight is still a concern: at 1.47kg, it's still quite unwieldy as a tablet. That makes it hard to

hold up for long periods, although once you start using them, the extra flexibility offered by those alternate physical configurations does prove useful.

Unlike most other 2-in-1's, HP has also come up with a hinge design that blends in; the metal hinges on the Spectre x360 look like they're simply part of the machine. So instead of noticing the hinges, your attention is likely to dart immediately to the unusually wide

trackpad. Nearly double the width of a traditional pointing device, the Spectre x360 offers an expansive and smooth surface to glide your fingers over. Aside

from the smooth feel of the trackpad, it's accurate to a millimetre, thanks to Microsoft's Precision trackpad software — co-developed with Intel, Synaptics and Elan. We did have some issues with accidental taps when using the keyboard, but its palm rejection is generally pretty good.

The keyboard follows a more traditional layout and a complementary white backlight to help you see the keys in the dark.

The keys themselves feel a bit mushy and don't offer the same crisp typing experience as a 13-inch MacBook. However, the typing experience on the 2-in-1 is more than serviceable, and most users won't notice unless they're sticklers for the very best laptop keyboards.

Hands down, the HP Spectre x360 has one of the best screens of any laptop I've reviewed. The convertible hybrid's display offers some of the best viewing angles I've ever seen — that's backed up by a wide colour gamut and a very bright panel. Though this HP 2-in-1 comes with a glossy, glass-fronted display, I had almost no problems using it outside in the sun. It comes as a complete rarity and makes this laptop truly a machine you can use in any scenario.

Like the little engine that could, the HP Spectre x360 can deftly take on any general-usage task, from simple web browsing to playing a virtual hand of *Hearthstone* with the quality settings at their highest. And you can squeeze a surprising amount of battery life out of this petite 13-inch convertible laptop — in PCMark 8's tough home test, it managed a solid 4:38hr

That said, this isn't a gaming machine: don't expect it to play much more than low impact indie games.

Together, HP and Microsoft have put together one of the sharpest looking 2-in-1 convertible laptops ever. Without any foreknowledge, most people would think the HP Spectre x360 was nothing more than an attractive, all-aluminum laptop. Thanks to a pair of well-engineered gear hinges, the transforming element of this laptop adds almost no extra weight, awkward proportions or clunky mechanics. Instead, the x360 only inherits the added flexibility of a 2-in-1 machine; letting you use it more ways than just on your lap. It's well worth a look over the many, many other 2-in-1 laptops. ■

“IF LENOVO AND APPLE
EVER GOT TOGETHER TO
MAKE A BABY, IT WOULD
BE THIS.”



1MM

THE THICKNESS OF LG'S LATEST OLED TV.

Dubbed the 'wallpaper' TV, this proof-of-concept prototype display was intended to showcase the potential of OLED displays. The 55-inch, 1.9kg and 1mm thick unit was revealed at a press event in South Korea, celebrating an OLED-manufacturing milestone the tech company recently hit. OLEDs have traditionally been expensive to produce, as a large proportion of the screens produced are defective. But LG announced it can now manufacture OLED screens with 80% yield rates, which are comparable to more-established display technologies and should reduce the consumer price significantly.

27%

THE PERCENTAGE OF AMERICANS WHO SUPPORT DRIVERLESS CARS

A poll conducted by the Ferenstein Wire news outlet has revealed that a surprising percentage of Americans are willing to embrace the concept of driverless cars. The poll results state that 27% of Americans would support the restriction of human drivers in favour of computer controlled automobiles. Many people would feel safer without humans behind the wheel, despite recent instances of Google cars getting into accidents. On the flipside, 71% of people would rather drive themselves.

\$24.5B

HOW MUCH CHINA'S ONLINE GAMING MARKET WILL BE WORTH IN 2016.

Taipei-based tech research firm Market Intelligence & Consulting Institute says that China's online gaming market is set to explode in the next year, reaching over \$24.5 billion, which is higher than last year's online gaming market in the United States. Reasons cited include a growing gaming scene, improved internet, more mobile devices and higher wages. On top of that, Sony and Microsoft will finally be allowed to sell game consoles in China from this year onward.

The news in numbers

A QUICK LOOK AT THE NUMBERS DRIVING THE BIG TECH STORIES.

[JOEL BURGESS AND STEPHEN LAMBRECHTS]

22.Mbps

THE AVERAGE INTERNET SPEED IN SOUTH KOREA.

Cloud service provider Akamai Technologies recently released its fourth-quarter State of the Internet report for 2014. Taking out the highest average internet speed was (surprise, surprise) South Korea, which was a good 5.4Mbps faster than runner-up Hong Kong's 16.8Mbps average. Considering Australia was ranked 42nd with an average of 7.4Mbps, we've got a bit of catching up to do.

Six figures

A PRO GAMER MAKES US\$100,000 A YEAR PLAYING LEAGUE OF LEGENDS

They call the United States the 'land of opportunity', and for one 21-year-old Venezuelan named Diego "Quas" Ruiz, that's certainly proved true. Ruiz relocated to Los Angeles to pursue a career in professional gaming. He earns around US\$100,000 a year to represent Team Liquid in the multi-player online battle arena game *League of Legends*. Just like a traditional athlete, Ruiz practices roughly 10 hours a day in order to stay in top competitive gaming form.



[CROWDFUNDED]

Kickstarted!

FROM THE PRACTICAL TO THE QUIRKY TO THE DOWNRIGHT STRANGE, CROWD-FUNDING WEB SITES HAVE ALLOWED THE CREATION OF AN AMAZING RANGE OF PRODUCTS. HERE'S A SELECTION OF LATEST PROJECTS THAT PIQUED OUR INTEREST.

[JOEL BURGESS]

[RE-CONNECT A MACBOOK]

Hub+

nonda.co | Initial Goal: US\$35,000 | Raised: US\$712,062 from 6,417 backers (6 days to go) | RRP: US\$86.

Inspired by the success of the HydraDock Kickstarter campaign — an 11-port USB-C hub for the new MacBook that was funded back in May — the Hub+ is another device for those wanting Apple's new 12-incher, but who aren't willing to commit to the drastic cord-cutting the device requires. (It only has one USB-C port.) If this happens to be you, you're not alone. The



Hub+ knocked over its initial funding goal of \$35,000 in just one day (8.5 hours to be precise) and has received more than 20-times the funding goal during the campaign. Containing two USB-C ports, a mini-DisplayPort out, three USB + charging ports and an SD-Card reader in a hub that fits into your pocket, it's easy to see why the Hub+ has been so popular.



[SAD TROMBONE]

Failed Kickstarter of the month

NOT EVERY CROWD-FUNDED PROJECT ACTUALLY GETS OFF THE GROUND.

[MERCILESSLY UNFUNDED]

RAMPAGE 3: NO MERCY

tinyurl.com/TLA40-Ramp | Funding Goal: €50,000 | Raised: €27,027 from 384 backers.

Taking out our Failed Kickstarter of the Month is a film project put forward by notoriously-crappy filmmaker Uwe Boll, which was only able to amass half its (rather meagre) €50K funding goal. Boll is known in tech circles for his lacklustre videogame adaptations, and the failure of *Rampage 3: No Mercy* marks the German director's third consecutive failed Kickstarter project. But with two films in IMDB's worst 100 movies of all



time — including *Blubberella*, a story about an overweight lady who's footsteps create explosions — we imagined that Uwe would've taken the news a little better. Alas, the director hit the internet with a 4-minute rampage of his own, firing expletives left, right and centre in a convoluted and oft-unhinged rant about his opinion on some of Hollywood's most famous players.

JULY
2015NOV
2015

[B-8-2-REZ]

BETTER RE

enlighten.today

Initial Goal: US\$50,000 | Raised US\$69,465 from 781 backers | RRP: No battery, US\$49; battery included, US\$55.

Modern smartphones are rather extraordinary when it comes to performance, but in terms of battery life it's hard to deny that they could still be better. Though there's no shortage of portable charging devices for your trusty pocket computer, none have tackled the problem in quite the same way as Better Re. Not only undercutting a large portion of commercial portable-chargers on price, Better Re also puts your old unused mobile batteries back to work — saving resources and costing you less. This handy little case slips over an old smartphone battery and transforms it into a mobile battery pack — which is pretty ingenious if you ask us.

FEB
2016

[HANDY]

GLOVE ONE

gloveonevr.com

Funding Goal: US\$150,000 | Raised: US\$54,712 from 193 backers (29 days to go at print) | RRP: Single glove and Leap Motion, US\$279; two gloves and Leap Motion, US\$450.

For the devs at Neurodigital Technologies, the visual VR world is not enough... so in 2014 they embarked on a project to bring haptic (touch) capabilities to VR. The Glove One is the company's first crack at a set of gloves that will allow you to use your hand to interact with the virtual world. The product doesn't contain any internal space-tracking technology yet and, as such, it requires the help of an external device like a Leap Motion camera to function, but the gloves are already compatible with a broad range of VR technologies. At US\$280 for a single glove they aren't cheap, but we've gotta admit that 'grabbing' some of the first *Minority Report* gloves would be pretty awesome.



[I F & % \$ # @ * LOVE SCIENCE!]

Pop sci

WHEN THE GEEKS INHERIT THE EARTH, THESE SCIENCE-BASED INVENTIONS WILL AT LEAST MAKE IT A FUN PLACE TO BE!

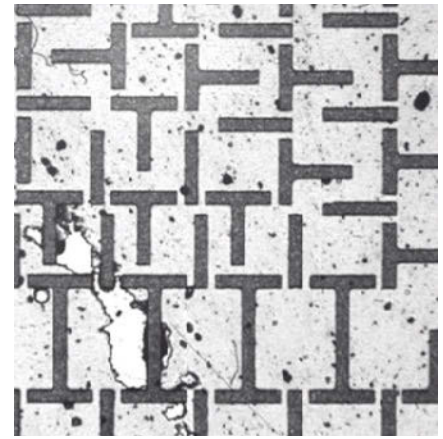
Bon-e-a-fide negative effect of screen time

LET THE BOY RUN WILD?

AN INTERNATIONAL STUDY has found that teenage boys who look at a screen for between 2 and 4 hours a day (or more than 6 hours per day over the weekend) had significantly lower bone-density than those who didn't. The study, led by the Arctic University of Norway, looked at close to a thousand 15-to-17 year-old Norwegians over a couple of years, and

controlled for other variables like the amount of exercise and exposure to alcohol or cigarettes. Interestingly, the effect was only noticed in teenage boys; the amount of digital consumption had no apparent effect on the bone-density of teenage girls.

[JOEL BURGESS]



Stanford builds water computer

BASICALLY, IT'S POWERED BY TINY WATER-BASED MAGLEV TRAINS.

Computers and water traditionally don't mix all that well. But researchers at Stanford University have developed a computer that moves a water droplet through a circuit in a way that mimics the transfer of information in a computer. Sitting inside a series of coils that create a two-dimensional magnetic field, a little droplet of water containing magnetic materials can be manipulated around a flat track of iron bars that connect to resemble a traditional computer circuit. Though it looks just like a real world game of *Pac-Man*, the transferred water droplets can be infused with chemicals or biologic material to create a complex delivery system. Though there is enormous potential for imaginative real world applications, it's likely to be immediately useful for speeding up the labour-intensive process of chemical testing in laboratories.

[JOEL BURGESS]



JURASSIC PARK BASICALLY A REALITY

UK SCIENTISTS FIND BLOOD CELLS WITHIN DINOSAUR FOSSILS.

Hold on to your butts — scientists in the UK have discovered red blood cells and fibres that have been preserved within 75-million-year-old dinosaur fossils from the Cretaceous period. Soft tissue that seems to include cells and proteins has been found within well preserved specimens, which is surprising as it was previously believed that proteins only had a shelf life of around 4 million years — but you know what they say, "life, uh, finds a way."

[STEPHEN LAMBRECHTS]



DR OCTOPUS NO LONGER JUST A COMIC CHARACTER

ROBOTIC TENTACLES COULD BE FUTURE SURGERY TOOLS.

Engineering researchers from Iowa State University have developed soft rubber-like tentacles that can be manipulated to hold delicate biological objects that are often destroyed by tweezers. Demonstrating by picking up a live ant, the researchers propose that the tool could be useful in micro-surgery, such as endovascular operations that use arteries to access surgical sites.

[JOEL BURGESS]



FOLDABLE, STRETCHABLE BATTERIES ON THE WAY

COULD THESE KIRIGAMI-BASED BATTERIES BE THE FUTURE OF WEARABLES?

Scientists at the Arizona State University have developed a new form of stretchable lithium-ion battery based on the principles of kirigami — a paper art that combines folding and cutting. The batteries can stretch to 150% of their normal size, and are intended to "disruptively impact the field of wearable electronics by offering extra physical and functionality design spaces." So far, the batteries have demonstrated the capability to power a smart watch. [STEPHEN LAMBRECHTS]



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TECHlife AUSTRALIA

ISSUE 40 | AUGUST 2015 | TECHLIFE • TECHLIFE TABLET EDITION IN APPLE NEWSSTAND & GOOGLE PLAY

REVEALED!
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LIFETOOLS

ENHANCE YOUR LIFE WITH TECH

[SPARK UP YOUR GREY MATTER]

Lifetools for
DIY tech fixes

TECH REPAIRS CAN BE EXPENSIVE ENDEAVOURS. WE DIG UP THE TOP GEAR, APPS AND WEBSITES THAT WILL LET YOU DIY... AND SAVE SOME CASH, TOO.

[JOEL BURGESS AND DAN GARDINER]

IT'S AN UNFORTUNATE truism that even the best technology can break. And for most of us, tech is now central, not just our work and productivity, but when it comes to entertainment, information and much more. As such, having a good idea of how things work — and the right tools and knowhow to fix it — it a particularly valuable skill in today's world.

Here then, we've collected up some of our favourite resources for both fixing and learning how to fix your broken bits. Before attempting a fix, we'd suggest keeping in mind that some devices are more fixable than others and moreover, if the device you want to fix is under warranty, that's almost always the better option to take.



[GADGETS]

A tech toolkit

THE RIGHT TOOL FOR THE JOB.

\$49 | tinyurl.com/tla40-tools

To be honest, these kind of toolkits can be found at just about any PC store (or even the likes of OfficeWorks) — there's no real reason we've chosen this one from local retailer PC Case Gear, apart from the fact that it ticks a lot of boxes we have for desirable tech tools. So why do you need one? Well, if you're going to be taking things apart in your attempt to fix them, there's nothing worse than getting halfway there and finding out that you don't have the right tool to get any further. Owning a dedicated toolkit'll fix that.

Bondic Liquid Plastic
WelderHOT STUFF!
notagluue.com

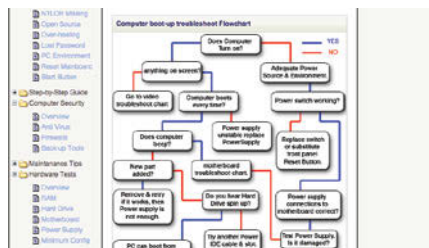
It's true that most of the applications that this little gadget is appropriate for could be achieved by regular super glue. And despite the fact that it has weld in its name, don't toss the solder and iron out just yet, because the material that Bondic dispenses isn't actually conductive at all. The plastic it uses is completely heat resistant, however, so you don't have to worry about using it on parts of your tech that have current flowing through them and it can be hardened quickly by a little accompanying UV light.

Sugru

FIX AND MOULD ALL THE THINGS.

From £6.99 | sugru.com

If you're looking to reconnect something like a power cord and want a little more flexibility than what super glue or Bondic provides, then Sugru is what you're after. This silicone based glue starts out like playdough, so you can mould it around a frayed mini-USB cord or HDMI cable and, after a few hours, it'll set into a strong rubber-like material. With no problem adhering to plastic, metal or glass this handy goop is useful for a huge range of DIY tech fixes.

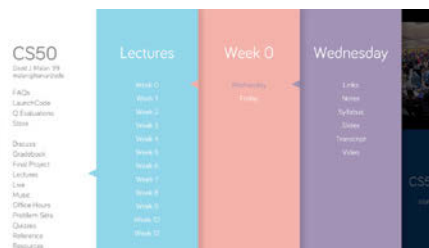


[WEB SITES]

FIXING MY COMPUTER

DOES WHAT'S ON THE TIN.
fixingmycomputer.com

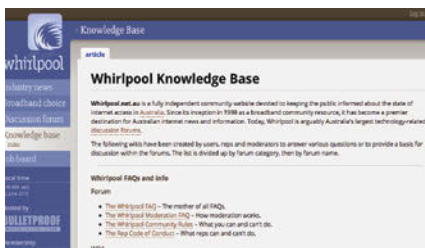
When it comes to computers it's not always easy to know what the actual problem is, let alone how to fix it. Fixing My Computer offers a series of diagnostic flowcharts that will guide you through all the steps to work out where the malfunction stems from. But the love doesn't end there; if it's a hardware system that's failing, it'll give you instructions on how to fix it too. For the most part this website focuses on software, but if the hardware fix is a simple enough it'll explain everything.



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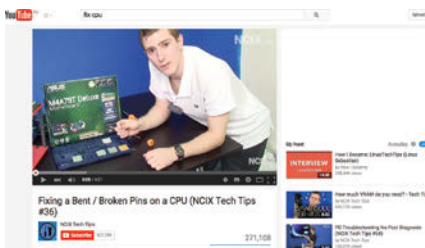
On the off chance you're thinking you want more than just guidance on a specific repair job and you've got a bit of time up your sleeve, why not take a free technology course through Harvard. This link directs you to a free computer science course containing bi-weekly video tutorials, a syllabus, course notes, quizzes and a PDF outline of the final project. With in-depth details of the full 11 week course, this website is a great resource to take your knowledge of technology (and how to fix it) to the next level.



WHIRLPOOL FORUMS

OVERFLOWING WITH HELP.
forums.whirlpool.net.au

This Aussie forum started off as a place for sharing information and advice for those who were having difficulty with their internet connections. Since then it's expanded to accommodate close to 700,000 registered users who discuss a broad range of techie problems. Not only does it have curated knowledge hubs about everything from Australian mobile networks to PC troubleshooting, it's also a great place to ask questions if you have a specific repair job in mind.



YOUTUBE

THE HOME OF HOW-TO VIDEOS.
www.youtube.com

Don't get us wrong: reading is great, but sometimes — especially with practical stuff like repairing tech hardware — watching a video of someone else walking you through the procedure is just a much faster way to learn. YouTube is full of tech repair tutorial videos and you can find a ton of videos on everything from fixing your tablet screen to reconnecting CPU pins. The only caveat with this one is that there's a high likelihood that you'll find a series of funny cat videos that have to watch first.

iFixIt Pro Tech Toolkit

TOOLS FOR MORE FIDDLY FIXES.
\$120 | macfixit.com.au

One of the great things about modern technology is how small it is — that is, of course, unless you've been designated the task of repairing it. If you're planning on performing surgery on your electronics, you're gonna need some kit. Considering iFixIt has made a reputation out of teardowns on consumer devices like the Samsung Galaxy S6 or the recent mini Apple Macbook, you'd think they would be in possession of the best tools in the business. And though the Pro Tech Toolkit may not be the cheapest techie quiver out there, it has more than enough pieces to repair just about any electronic product you know.



[ANDROID, IOS]
IFIXIT: REPAIR MANUAL
MAKE THAT 'YOU FIX IT'.
ifixit.com/Apps

Drawing on the web site's 15,000 free in depth manuals for fixing various electronic and mechanical devices, the iFixit app lets you find and use those relevant instructions on the go. Whether you want to install a new car stereo or fix your smartphone, iFixit offers great in-depth manuals on how to do it. As one of the few outlets that will give you step-by-step instructions on how to replace an iPad's battery, screen or camera without completely destroying it, iFixit is an essential lifetool for tech handymen.



[ANDROID, IOS AND WINDOWS PHONE]
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instructables.com

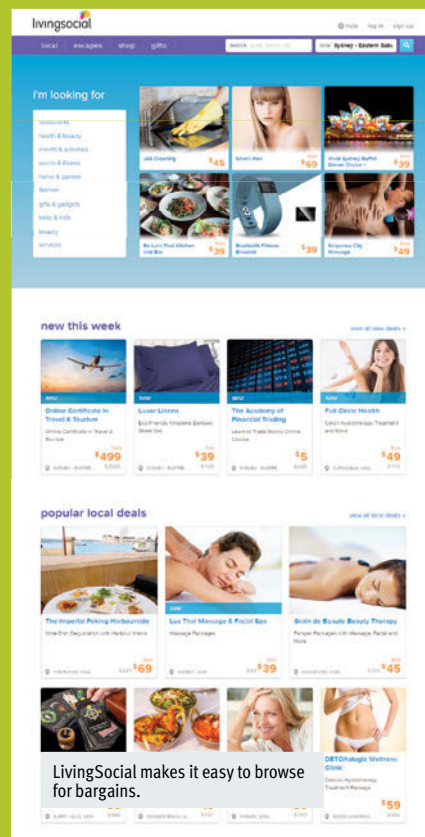
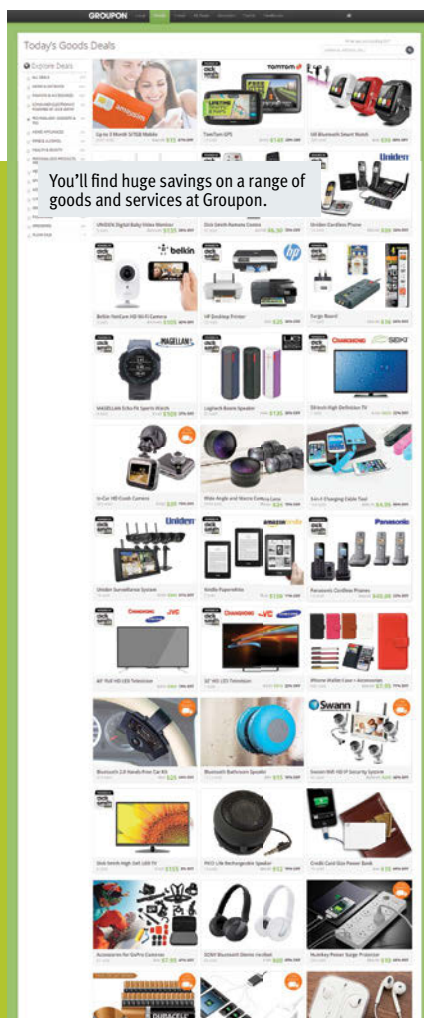
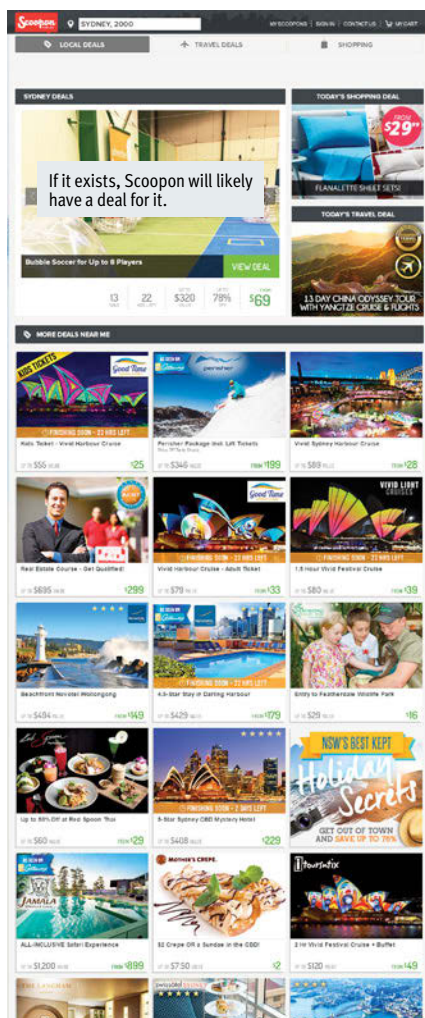
If you can't think of anything you need to fix immediately, but you *are* in a DIY mood, then Instructables is the perfect place to find your next project. Running off user-uploaded DIY instructions, Instructables isn't always the most user-friendly source of info, but there is generally enough on there to guide you through what you need to do. From repairing an iPhone screen to making a low-tech speaker from a toilet roll and two paper cups, this DIY hub almost always has someone who's done it before.

[WINDOWS, LINUX]
HIREN'S BOOT CD
THE CURE FOR A SICK PC.
www.hirensbootcd.org

This all-in-one PC troubleshooting kit is available as an image you can burn to a CD or create a bootable USB-drive from, and it's primarily designed to get you out of the muck when your computer just won't boot for some reason, or you need to do some low-level changes (changing partitions, for example) that the OS can get in the way of. With heaps of free, useful apps which can be used from a DOS command-prompt interface or even from a 'mini XP' GUI, this is definitely something you need in your fix-it toolkit.

[WINDOWS]
PORTABLEAPPS.COM
TAKE YOUR APPS ANYWHERE.
www.portableapps.com

PortableApps.com offers a big repository of open-source and freeware Windows software that can be run directly from a USB drive, with no installation required. It's a good alternative to Hiren's Boot CD. While Hiren's does the more hardcore stuff, if you just want build a software toolkit on a USB drive for more general Windows fixes, this one's a somewhat friendlier alternative. You'll find antivirus and antimalware apps, of course, but also a huge range of other tools and even games and benchmarks so you can test whether a PC is performing like it should. ■



[BARGAIN HUNTER]

Daily deals

EAT, SHOP AND TRAVEL FOR LESS – EVERY DAY.

[OLGA JEVDIC]

IF YOU'RE A keen bargain hunter, and you're prepared to put a little bit of time and effort into it, there's pretty much no reason to ever pay full price again with daily deals web sites. While it means regularly checking the web sites and a whole lot of regular emails, the money you save will be worth it.

Sign up and you'll have access to discounted food (in the form of groceries and restaurant vouchers), shopping (all kinds of goods ranging from tech gear to apparel), local experiences (everything from harbour cruises to spa packages) and travel (complete holiday packages and discounted theme park entries).

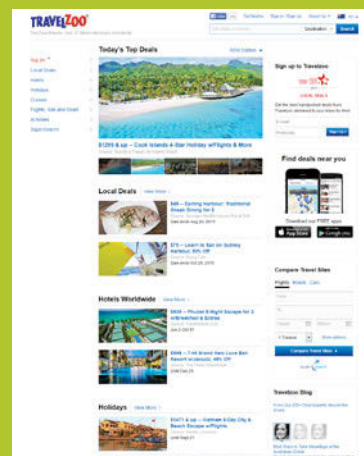
The best part is you'll often be inspired by something that you might never have thought of before, or find a special offer that you can enjoy with friends or family; for instance, you'll find that most meal vouchers are for two people, although groups of four or more are catered for, often at an even greater saving.

DAILY DEALS SITES

These sites generally provide discounts in a range of categories, although there are also those that specialise in one particular area, such as travel or shopping. All of these sites operate on a subscription model, where you're sent a daily email containing relevant offers in your chosen location. You can also browse through the deals on the sites themselves or via the accompanying apps.

Scoopon (Scoopon.com.au) is the juggernaut that also encompasses daily deals sites Catch of the Day (www.catchoftheday.com.au) and Mumgo (www.mumgo.com.au), as well as discount grocery retailer Grocery Run, food delivery site EatNow.com.au and restaurant booking service Yumtable. Scoopon is divided in to three main categories: Local Deals, Travel Deals and Shopping.

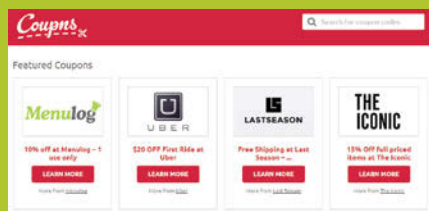
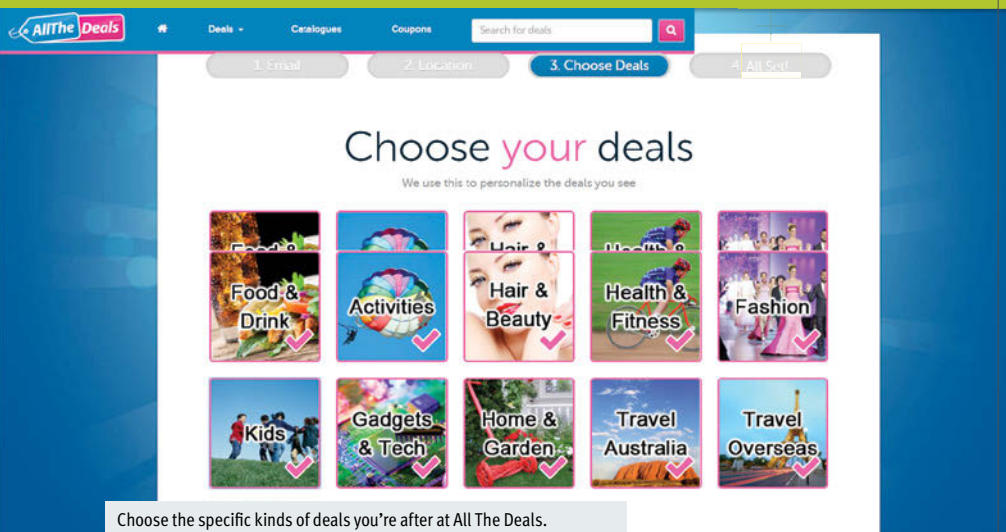
Local Deals includes discounts for restaurants, accommodation, online courses, discount wine, spa experiences, surfing lessons



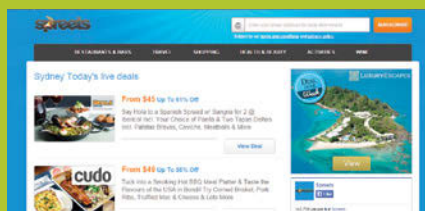
Book a holiday or weekend getaway on the cheap with Travelzoo's daily deals.

DAILY TRAVEL DEALS

While we've looked at Travelzoo (www.travelzoo.com.au) before (see *TechLife* April, page 25), it bears mentioning again for its daily travel offers. The top daily deals are usually holiday packages, hotel stays or tours, while the other travel categories down the left-hand side feature the best deals from around the web. You can also subscribe to the weekly Top 20 email to get deals delivered right into your inbox and there's an app (iOS and Android), so you can check out the specials no matter where you are.



Buyii's sister site Coupons offers coupons for a number of online retailers.



Hunt down a bargain without the effort at Spreets.

and a whole lot more. Travel Deals features hotels, packages and tours for both local and international destinations, while Shopping is divided into sub-categories, with the latest sales across all categories listed under New.

Groupon (www.groupon.com.au) is the other main player in the market and is easier to navigate than Scoopon, with deals arranged in the following categories: Local, Goods, Travel, All Deals, Groceries, Events and Healthcare. While the site has a search function, it doesn't appear to work; however, the app's is brilliant.

You're pretty much guaranteed to have your bases covered with the two big deals sites, but if you really want to make sure, you can also sign up to LivingSocial (www.livingsocial.com.au), Cudo (www.cudo.com.au), Ouffer (www.ouffer.com.au) Deals.com.au (www.deals.com.au) and OurDeal (www.ourdeal.com.au).

ALL THE DEALS

If you like the idea of scoring a great deal, but don't want to get inundated with emails, consider a deals comparison web site. With these services, you can opt to receive a single daily email containing the best deals from around the web, or simply visit the site to see all the best deals in one spot.

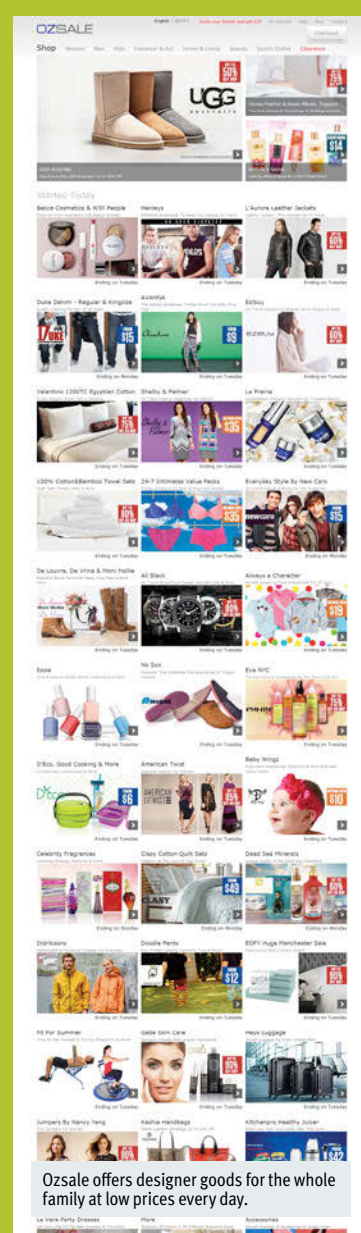
Spreets (www.spreets.com.au) is a group buying site that also combines the best deals in a

range of categories from Scoopon, Groupon, LivingSocial, Cudo. Deals.com.au and travel deals site Luxury Escapes. Choose your location and browse the site, or sign up to receive a daily email that lists the latest offers from all the aforementioned sites.

All The Deals (www.allthedeals.com.au) is one of our favourites because in addition to specials from all the deals sites, it also includes stores like Dick Smith and Harvey Norman. You can register to receive a daily email of bargains in categories you specify, and view online catalogues from a range of major retailers. There's even a link to sister site Coupons (www.coupons.com.au), where you can save at other online stores.

Deals Extra (www.dealsextra.com.au) is great for those who just want to see the best deals — there's no email subscription, it simply aggregates the best the deals sites have to offer. There are no goods available for purchase here, but dining, activities, services and more are covered.

We love the personalisation options at Buyii (www.buyii.com.au). Once you register, you'll see all the deals from the major players — check all the boxes for the categories you're interesting in. Signing up for the email is a similar process, although you choose how often you'd like to receive your personalised email. ■



MEMBERS-ONLY SHOPPING SITES

These sites offer daily deals of a slightly different kind — namely, heavily discounted brand-name goods across a number of categories, often up to 80% off retail prices. You'll find clothing for men, women and children, travel gear, homewares and more, plus a selection of items that have been reduced even further. The biggest player in this area is Ozsale (www.ozsale.com.au), which sends members a daily email with information about current and upcoming sales, as well as those that are about to end. Sales last between one and three days, and items from popular brands can sell out very quickly. The Ozsale app (iOS and Android) offers a well-organised way to browse the sales and even gives access to most sales an hour before web site users.

DISCOVER

ESSENTIAL APPS, TOOLS AND ENTERTAINMENT

[HAPPY]

Apps to keep you mindful

FEELING DOWN OR STRESSED? WE TAKE A LOOK AT APPS DESIGNED TO GIVE YOU A MENTAL BOOST IN THE PATH TOWARDS A HAPPIER AND MORE FULFILLING LIFE.

[TIM BOTHWELL]

WHILE MENTAL HEALTH is still something of a taboo topic in today's society, there's no denying that our internal thoughts and feelings play a major part in our overall health and wellbeing. Whether it's dealing with stressful situations or more serious issues such as depression, finding ways to manage

and deal with emotions is crucial in ensuring a healthier, happier mind. Often, the best way to deal with mental issues is simply to talk to someone — whether that's a family member, friend, even a professional counsellor — they can provide the tools and support you need when you're not feeling the best. There's also a

range of apps designed to assist you along the way — tackling topics such as meditation, yoga and better sleep management — which can help give you tools to improve your headspace and overall wellbeing.

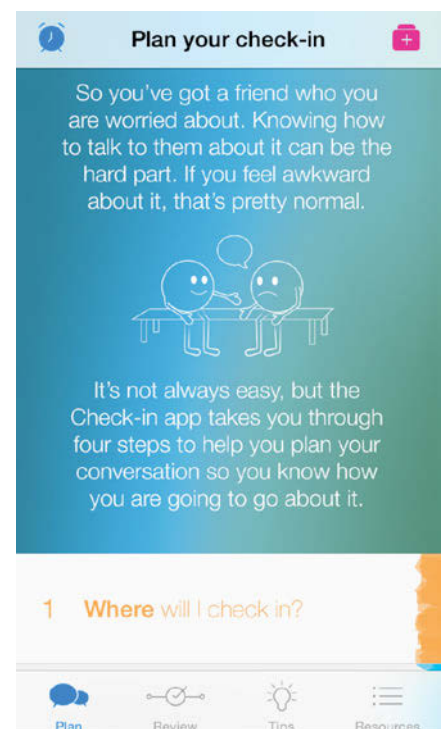
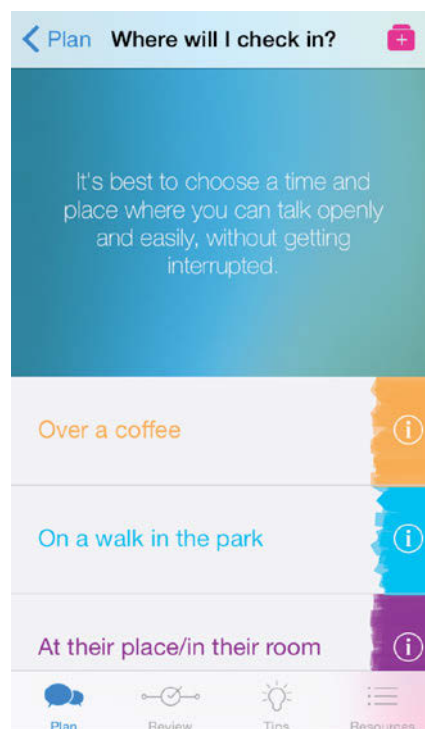


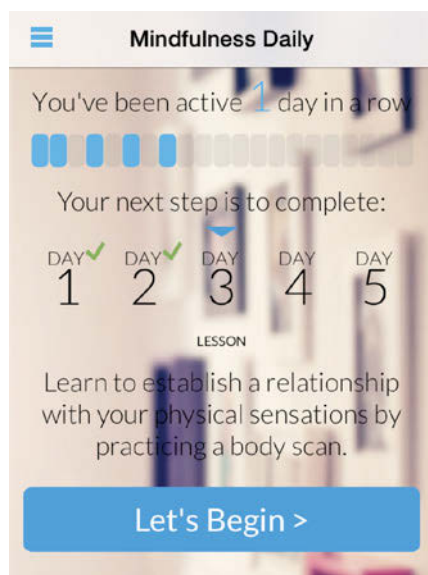
[IOS, ANDROID]

Youthbeyondblue
The Check-in

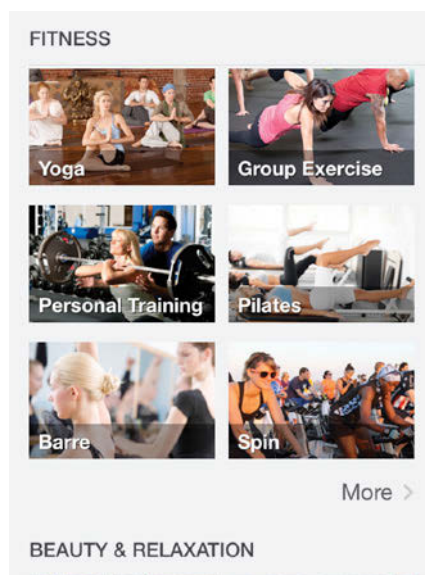
Free | www.youthbeyondblue.com/help-someone-you-know/thecheckin

With almost half of us expected to experience some form of mental health condition during our lifetimes, it's crucial that we're attentive to the needs and feelings of friends and family. If, at one point, you do begin to notice someone acting odd or secluded, then it's important to check that they're OK. While talking about mental illness is often not an easy conversation, this app can help guide you through the process. Structuring your talk in blocks, Check-in will ask you where you plan on having the conversation — whether it's at school or over a coffee; how you'll start; the symptoms you've noticed; and, most importantly, how you'll offer your support where it's needed. Along with a plan, the app includes tips and information that's useful to refer to, both during and after your conversation.

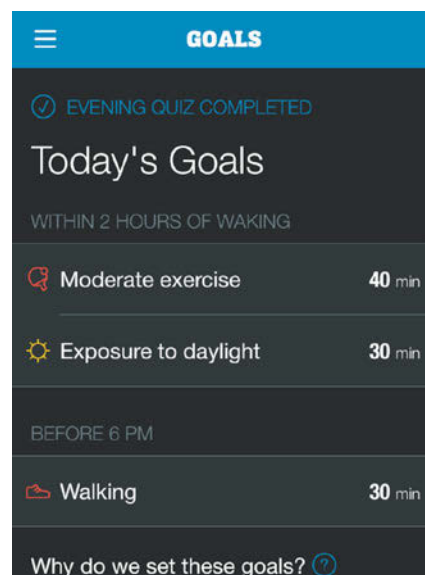




Many of us forget to regularly stop and take stock of our mental health, with the small things quickly taking over our lives. This self-help tool aims to make you more mindful throughout the day, resulting in reduced stress, improved performance and better sleep. Consisting of a 21-day program, Mindfulness Daily features numerous audio-based lessons focussed on areas such as breathing, body awareness and kindness, with the app recording your progress to gain meaningful insights into your brain-health over time. One handy feature is the ability to receive notifications throughout the day, reminding you to stop and reflect, with a short 'pause' feature ensuring you'll achieve relaxation, even if it's only for a moment or two.



Whether it's yoga, pilates or boxing, many people see dedicated fitness classes as the better alternative to spending aimless hours at the gym — not only are classes run by people that generally know what they're doing, but they can also be surprisingly fun. MindBody Connect takes a digital approach to fitness, providing listings to a range of health classes in your local area. Consisting of sessions from thousands of businesses worldwide, you'll be sure to find a class regardless of whether it's gymnastics or acupuncture, and you can even search for a certain teacher. Once you've found a class that interests you, sessions can be booked and paid for from within the app. Also cool is the ability to sync your classes with your phone's calendar.



If you struggle to get out of bed in the morning then this app will likely appeal. Consisting of a personalised 6-week program, Recharge has been specifically designed to improve your health and wellbeing both physically and mentally. Beginning by entering your current sleep and exercise habits, Recharge will create a customised program to help improve your daily routine. Included is the ability to record your daily progress — enabling you to keep track of your moods, energy levels and sleep patterns over time. The app also features a number of scientifically-backed tips to educate you on how your sleep is directly affected by your level of physical activity.



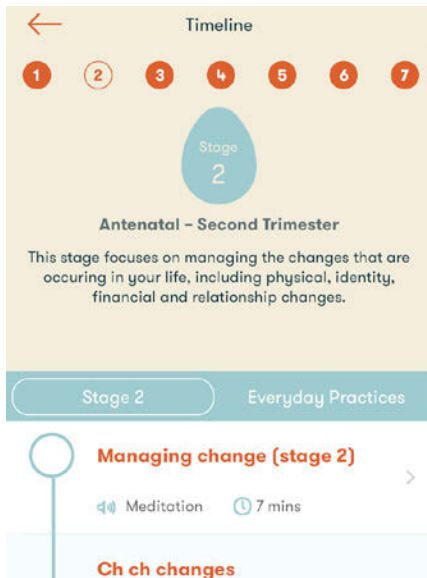
Sure, many of us mightn't drink enough to be classified as alcoholics, and yet the pounding in our heads the following morning might make us wish we had one, two, even ten less drinks the night before. Hello Sunday Morning takes a passive approach in attempting to help improve your relationship with alcohol. Rather than closely monitor every drink consumed, HSM encourages you to set small, achievable goals each week — such as to participate in a yoga or pilates class, or go to a social gathering drink-free. At the end of the week the app reminds you to 'check-in' with yourself, helping you get a better understanding of your overall drinking habits.



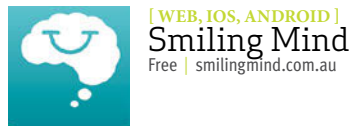
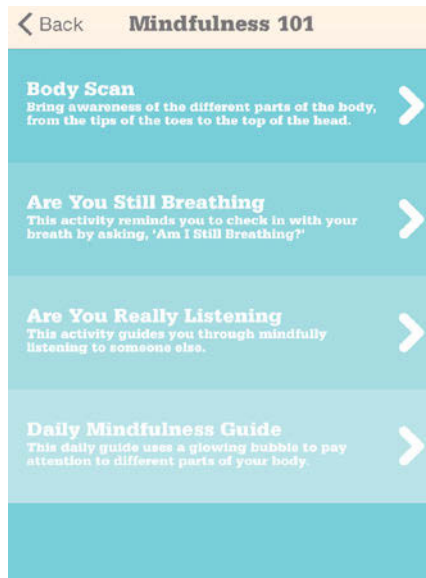
Remembering the good old days has never been easier, with this app giving you the ability to record the events of your daily life in a text-based form. Expanding upon your typical paper-based journal, Day One enhances your diary entries through the ability to include photos, weather information, GPS locations or even the current song that's playing on your phone. As you begin to record important or life-changing events and achievements, posts can be shared with friends and family via Facebook or email as well as be uploaded to your very own Day One webpage. Past entries can be browsed by calendar, timeline or map, with posts able to be searched by keyword, tag or hashtag.



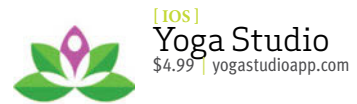
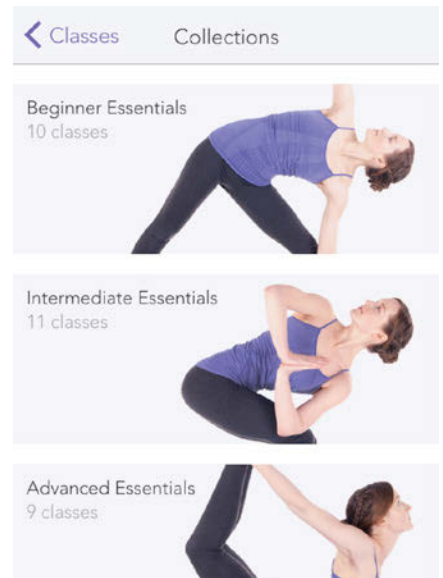
If meditation just isn't your thing, then how about heroes and villains? Turning your mental health into a real-life game, SuperBetter attempts to motivate you towards a better lifestyle, albeit through a slightly novel method. Developed in collaboration with scientists, psychologists, and medical researchers from institutions including Stanford and Ohio State University, the app encourages you to undertake real-world 'quests', with the use of 'power-ups' helping to boost your real-world mood and general headspace. Team up with friends (or 'allies') and SuperBetter assists you in identifying the 'bad guys' that are preventing you from 'levelling-up' in real life.



No matter if you're the mother, father, aunt, or uncle — having a baby can be a stressful and strenuous task for all those involved. Mind the Bump helps prepare you both mentally and emotionally for the title of parent through what's called 'mindful meditation'. Designed by an array of psychologists and psychiatrists, the app will help you deal with the ongoing pressures and changes that occur throughout the early parenting process — reminding you to focus and become more aware of the present moment, giving you the support you need from the very first day of pregnancy right through to 24 months after the baby is born.



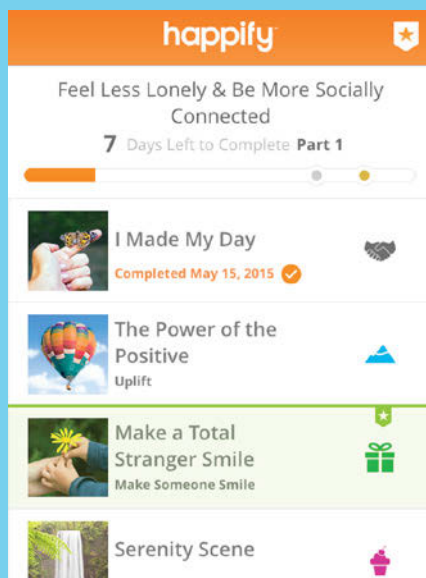
At stressful times it's easy to forget to take a step back from our busy lives to remember what's important, namely our own headspace. Smiling Mind, in collaboration with BeyondBlue, hopes to assist you in important areas such as relaxation and reflection by giving you access to a number of free downloadable audio programs. With classes developed by psychologists experienced in areas such as mindful meditation, programs are available for children as young as 7 right through to adults, with each focussed on improving skills associated with things like breathing, emotional awareness, or mindful eating, with the end result (hopefully) being a healthier, happier you.



Sure, you could pay an excessive amount of money to go into a 40°C room to do bikram yoga, but you could also just get this app for a fraction of the price and do it all from the comfort of your own living room. Featuring over 280 different poses — each with helpful photos and information about its benefits — you'll be sure to master poses like the downward dog in no time, with stretches even able to be saved to a list of favourites. Included are 65 different classes ranging from intermediate to advanced, with sessions focussing on areas such as strength, flexibility and relaxation. If one of the pre-made classes doesn't satisfy your needs, you can even choose to create your own.



You'd think locking yourself in a room playing games wouldn't be that good for your health (some of us disagree...), and yet Happify does just that in an attempt to improve your overall mindspace. Using something called 'science', the app combines meditation, games and quizzes to help you to achieve a happier, more fulfilling life. Consisting of individual 4-week programs, classes focus on improving things such as stress management and negative thinking, with an included community feature allowing you to interact with like-minded users in your mission towards better health. Interestingly, the company behind the app claim that 86% of those who frequently used the service felt better about their lives after 2 months.



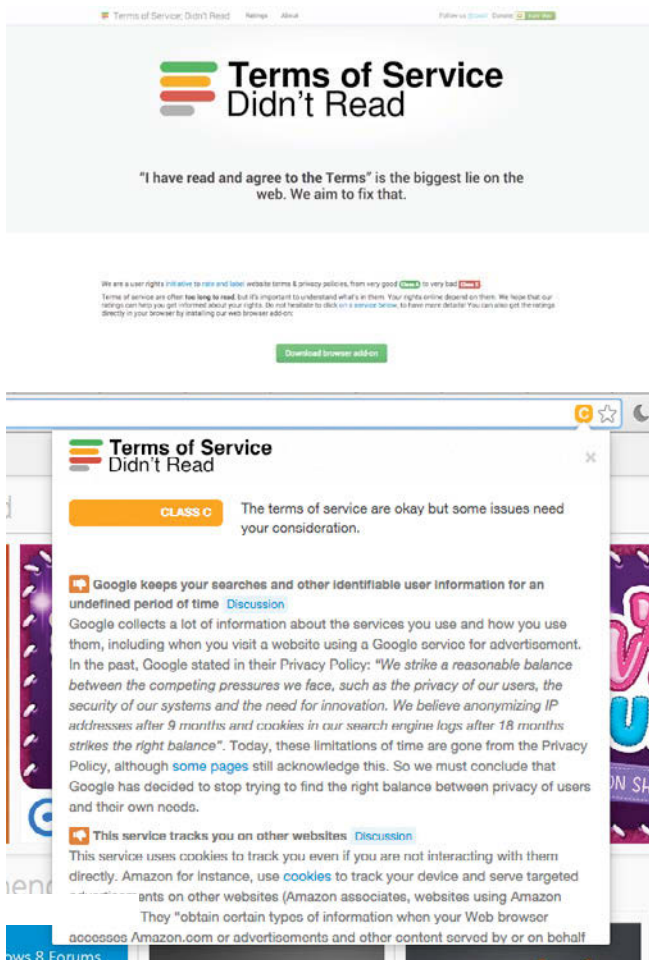
BUILD A 4K-READY MEDIA CENTRE

WATCH, STREAM & RE-ENCODE YOUR FLICKS & TV FOR ANY SCREEN — BIG OR SMALL!



AUSTRALIA'S LEADING TECH MAGAZINE!
GRAB YOURS ON TABLET
ON SALE NOW
FROM ONLY \$4.99





[BEST APPS]

Unearthed

THE **TECHLIFE** TEAM'S FAVOURITE NEW SITES, SERVICES, BROWSER PLUGINS & OTHER HANDY TOOLS.

[WEB SITE]

Terms of Service; Didn't Read

A TL;DR FOR LONG-WINDED LEGAL TERMS OF SERVICE.
Free | tosdr.org

If you've ever wondered exactly what you're signing up for (or, more likely, signing away) when you click 'I agree' to a web site's terms of service (TOS) agreement — but don't fancy wading through mountains of legal-speak — then this site aims to help. It not only provides summaries of the TOS for a large number of big-name web services, but it also rates how relatively onerous those terms are, making it very quick and easy to assess how consumer-friendly they are. Anonymous web search engine DuckDuckGo, for example, gets a Class A rating because it doesn't track you at all, while YouTube gets a Class D for various offences including having too-broad a copyright license, not really deleting videos you've taken down, and being able to change the terms of service without warning. Terms of Service; Didn't Read also offers add-ons for most major browsers (sans Internet Explorer) so you can see the rating for the site you're on right in your URL bar. The only downside is that this is still a relatively new site and not every service they've assessed list has a class rating yet — including a lot of big-name ones, like Facebook. Still, these should come with time, and what is on TOSDR now is pretty fascinating. Hopefully, this 'name and shame' initiative will drive web services to adopt more user-friendly terms. And if not... well, at least you know which ones to avoid.

[DAN GARDINER]

NEXTDRAFT
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"Dave Pell's expert curation, deep insight, and dead humor is the best proof I've found for why robots won't replace editors anytime soon."
Noah Robischon
Exec Editor, FastCompany

"Dave shows me the most interesting, entertaining, and important stories that I've missed. Next Draft is invaluable."
Tim Sullivan
Editorial Dir, Harvard Business Review

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Benjamin Dreyer
Managing Ed, Random House

"NextDraft is the only newsletter I read every day."
Howard Weaver
Former VP, ABC/Disney News

"The NextDraft newsletter is indispensable. Dave sifts out through the clutter with urgency, humor and smart, I never miss it."
Don Van Natta Jr.
ESPN

"It's about time this career had a managing editor, and Dave Pell turns out to be the perfect choice for the job. NextDraft is always surprising, often surprising and quite witty (especially given that he is an American). An essential too long read."
Matthew Lishup
The Economist

"I'm loving NextDraft, soaking bits of news witty, annotated, delivered daily. Annual read."
Melanie Pinola
Lifehacker

"Dave is an expert at picking through the deluge and serving up the day's best stories from a huge variety of outlets."
Sapna Maheshwari
BuzzFeed

"NextDraft is the most important and interesting news together with..."
Sapna Maheshwari
BuzzFeed

[EMAIL NEWSLETTER]

NextDraft

JUST THE IMPORTANT STUFF.
Free | nextdraft.com

With the break-neck pace of today's media landscape, it can understandably be a little hard keeping on top of all the news. NextDraft is a hand-curated daily email newsletter that aims to distill all the media guff flying about into a list of the 10 most-interesting stories. Think of it as a wittily-written executive summary of the news, if you will, with links to the full stories from other media outlets, in case you want to read more. While NextDraft isn't exclusively about tech, it is tech-leaning, so you'll generally get all the important 'big picture' tech stories covered. NextDraft is also a little Amero-centric at times — so you'll need to be able to put up with an item every now and again that's not particularly relevant to Australian readers, such as the 'deflategate' controversy at this year's Superbowl. And if an email newsletter doesn't sound like your thing, there's also an iOS app and an RSS subscription option.

[DAN GARDINER]



[PODCAST]

ABC Science — Dr. Karl on Triple J

YOUR SCIENCE STAPLE.

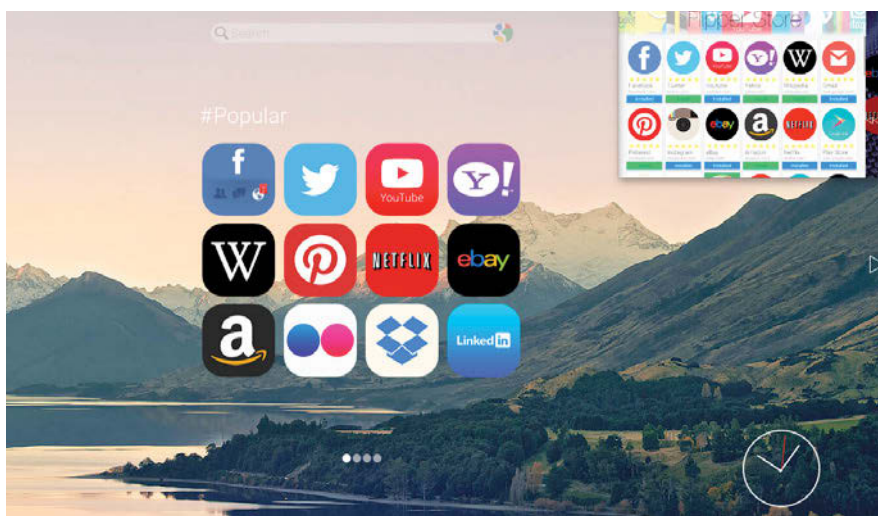
Free | abc.net.au/science/drkarl

Dr. Karl has been presenting on Triple J in one form or another since 1981, so if you're into science, chances are you've come across him before. That said, he'd have to be one of the most broadly knowledgeable scientists on the planet and during his weekly podcast with Triple J he answers an astounding array of questions from people, often centring around the science behind their unusual experiences. Because this show is basically a 45 minute long Q&A session, it's hard to know where the callers will take him. (If you're looking for a more

curated science session, he also did a season of video podcast in 2010 called Sleek Geeks available at abc.net.au/tv/sleekgeeks).

Dr. Karl Kruszelnicki has an impressive academic background, which clearly shines through in his ability to answer complex questions covering disparate scientific disciplines on the spot, and because the questions are curated by everyday Australian callers there's a good array of local, topical and relevant science.

[JOEL BURGESS]



[BROWSER EXTENSION]

Flipper

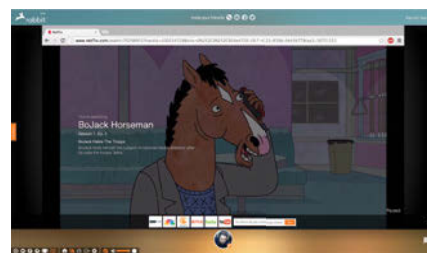
FLIP TO A NEW 'NEW TAB' PAGE.

Free | tinycloud.com/TLA40-Flip

If you're like us, your New Tab screen in Chrome probably needs an update — you just didn't realise it. Released earlier this year, Flipper is a Chrome extension that transforms your New Tab page into a beautiful and highly functional internet hub. Front and center are a series of neat customisable tiles of your favourite web sites, which flip to reveal a snapshot or more info (the Facebook tile displays your friend requests, notifications and messages, for example). This iOS-esque tile display is overlaid on a beautiful high resolution

background image, which can be chosen from a selection of wallpapers or an image of your own. At the edge of this elegant New Tab screen are a number of useful customisation settings, a pop-out tab with all your Google web apps (Google Drive and Gmail, for example) and a daily to-do list, making for a pretty awesome combination of design and functionality. With an added bookmark dropdown app, once you Flip you won't want to go back.

[JOEL BURGESS]



[VIRTUALLY TOGETHER]

RABBIT

CHAT WITH YOUR FRIENDS WHILE WATCHING NETFLIX AND YOUTUBE.

Free | rabb.it

An interesting new service, Rabbit allows you to watch online videos simultaneously with your friends using your computer's webcam and microphone. With Rabbit, you can see each other and chat about what you're watching (or anything else, for that matter) like you would if you were sitting on the same couch together. It's an ingenious way for friends and family to watch their favourite shows together, even when they're physically far apart.

Rabbit provides you easy, clickable links to a number of services that work well on it, including Netflix, YouTube and Crunchyroll, as well as a number of American services, like Hulu, NBC.com and HBO Go. But that's just the start — you can literally type in the URL of any website and view it with your friends at the same time.

Admittedly, web sites and video services that open up within Rabbit come through at a reduced resolution compared to what your monitor is probably capable of, but the service works fantastically nonetheless.

[STEPHEN LAMBRECHTS]

[WEB SITE]

EFF 2015 DATA PRIVACY REPORT

WHICH COMPANIES HAVE YOUR BACK, AND WHICH ONES ARE LEAVING YOU OUT IN THE OPEN?

Free | tinyurl.com/tla40-eff

Let's face it — some companies are much better than others when it comes to holding on to your personal data. This is precisely why the digital rights organization the Electronic Frontier Foundation (EFF) continues to publish yearly reports which inform the public on the privacy practices of online service providers. The report reveals which companies value your privacy, and which are more likely to fold under pressure from government requests to access your data.

Nine major companies have received full five star scores in the report, providing total data privacy for their users. These nine companies are Adobe, Apple, CREDO, Dropbox, Sonic, Wickr, Wikimedia, WordPress.com, and Yahoo. At the opposite end of the spectrum, are US telcos AT&T and Verizon, receiving only one star.

Facebook, LinkedIn, Pinterest, reddit and Twitter did well, receiving four stars each, though each has room for improvement.

While Facebook itself impressed, the Facebook-owned service WhatsApp performed dismally, earning its only star solely because of its parent company's policies.

[STEPHEN LAMBRECHTS]



[GAMES]

Paint it black (and blue, and green, and purple...)

THE **TECHLIFE** TEAM TESTS THE LATEST GAMES ON PC AND CONSOLES, STARTING WITH NINTENDO'S LATEST THAT PUTS SOME COLOUR BACK INTO FIRST-PERSON SHOOTERS.



Splatoon

THE OLD MASTERS RETURN TO PAINT LIKE YOU'VE NEVER SEEN.

\$79.95 | Wii U
splatoon.nintendo.com



EVERYONE LIKES TO pull the trigger. One of the brain's more deep-set creases seems to make us really enjoy pushing a button and watching things happen as a result. *Splatoon* is a game that realises how weak we really are as a species — every second you're not pulling the trigger, you're losing.

Nintendo's done this trick before. In fact, some would say that the company's genius lies in noting and exploiting the most primal things we enjoy as players. And Nintendo's quietly historic move into the world of multiplayer online shooters comes complete with some of their trademark thinking. Everyone has stopped playing a shooter to unload a weapon's clip into a wall, just to see what it looks like, and how the gun feels. In *Splatoon*, doing that is your primary scoring mechanism.

Its central Turf War game mode plunks two teams of four into an arena, each with a different shade of ink. The goal is simply to be the team that covers the most map in their colour. It's a multiplayer shooter where the level itself is your prime target — enemies are basically just an obstacle to your goal, and killing them is more a way of stifling their ability to win, rather than a means of

triumphing yourself. It's gloriously simple, and almost endlessly satisfying. Your final scoreboard isn't a dull graph of kills, deaths, assists and ratios; it's a bird's eye view of the arena, coated in neon, like Jackson Pollock interpreting a Jumbotron.

Crucially, though, the means of getting to that final screen with a win is a far more complex prospect than simply 'shoot all the paint'. Your team's ink becomes a means of traversal — every player can drop into their colour and turn into a squid (it's not for us to question why), effectively becoming invisible and moving at twice the speed. Turning into squid form is the only way of reloading, and you can swim up walls or through otherwise impassable grates. It's therefore initially as important where you paint as it is how much you do — not least because you can barely walk through enemy paint, never mind swim.

How you paint also becomes a major consideration. *Splatoon*'s weaponry falls into mostly recognisable categories, although you'll be unsurprised to hear of the inventive twist that each has been given. Mid-range, rapid-fire Splattershots are your assault rifle, while the Splat Charger is a sniper's pick, bursting enemies in a single shot (rewarding you with an eruption of your colour), but only spitting out weedy stripes of ink in the process. The Roller's the real outlier, an enormous version of the bedroom painter's tool of choice. It covers massive areas, but it's essentially a melee

weapon, making you a prime target.

There's enormous depth here, and the kind of genuine tactical thinking to be had that we'd expect of some dour MOBA, rather than a game in which squids wear hats and your XP level is a measure of how 'fresh' you are.

You probably get the point by now (although we'll spell it out just in case): *Splatoon*'s core concept is a winner. Nintendo has done it again — this is a genuine reinvention of the online shooter, a meticulously thought-out way of bringing totally new ideas to an iterative genre.

We wish we could end the review there. Unfortunately, not only has Nintendo shined its usual genius-light over the cracks in a genre, it's brought its habitual clumsiness along and knocked out a few new ones along the way.

For a start, in a game entirely about the intricacies of its maps, to include only a paltry five seems miserly to say the least.

Then there are the more technical problems. For a start, the game comes with no ability to form a four-person party.

Those gripes aside, everything here fits seamlessly together (slim as the package is) and the central game will surely delight Nintendo fans and serious shooter enthusiasts alike. If what we love about pulling a trigger is that it makes amazing things happen with very little effort, then *Splatoon* channels that feeling with total success.

[JOE SKREBELS]



Not a Hero

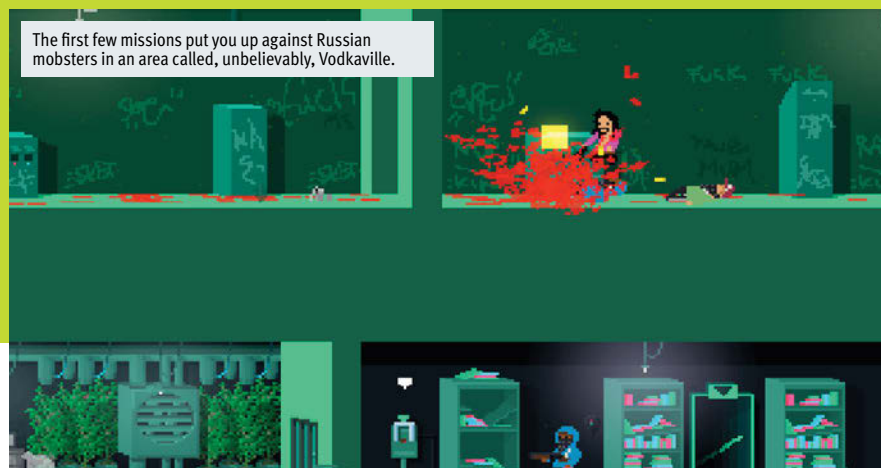
AND MORE PERTINENTLY, NOT HOTLINE MIAMI EITHER.

From US\$12.99 | PC, PS4, Vita
www.developerdigital.com

As if we hadn't had our fill of careerist polities spouting rubbish, operating factory machinery in high-vis jackets while eating onions in the hopes of winning our votes. Now Bunnylord comes along and turns videogames — our sacred retreat — into yet more electoral vexation. He's running for mayor, and for some reason he needs you to clear out a series of multi-story warehouses full of goons to boost his approval rating. Before each of *Not A Hero's* 20-some missions, he'll brief you in language bristling with irritating British tosser affectation. "It'll be ultra hilarious!", he honks. "Here's a graph of its awesomeness compared to a broken falcon." Yeah mate, that's well jackson. And then you're standing atop one of those warehouses, ready to test out if the game's side-on perspective shift of Hotline Miami's breakneck pixel slaughter plays as good as it sounds. By the time you reach ground level, it's clear that it doesn't. There isn't one glaring aspect of *Not A Hero's* combat that prevents it from matching the game it so obviously wishes to emulate, but rather a collection of minor missteps and mechanical fuzziness. While it's possible to one-hit-kill enemies, most of the time you'll get drawn into a shootout with them lasting several seconds — often long enough for you to dip in and out of cover, have to reload, and occasionally resort to spam-shooting. You're able to knee-slide into enemies and stun them, setting up a gratifying execution when they're floored, but you're rarely able to experience any kind of flow because of poor level layout and goon placement.

Instead, you stumble from one encounter to the next, feeling lucky rather than empowered. Developer Roll7's debut, *OlliOlli*, emphasised that feeling of flow above all else, so it's especially perplexing for there to be such an outright weakness in that regard here. After a lacklustre opening hour, the game opens up new possibilities as you unlock more playable characters, like Jesus the constantly hip-thrusting, uzi-toting Brazilian, or nimble Sarah who can shoot on the move. This encourages you to retry completed levels and tick off all four objectives at once — a time limit, some collectibles, a timed kill streak, etc. Here the game does bear some of *OlliOlli's* quality; enough to get you lost in a trance of retry-spamming as you rehearse a perfect minute of play. And on the rare occasion that everything falls in line and marches to the beat of your murder-drum, there are spectacular sequences to savour. Crashing through a window, snapping someone's neck at the exact moment the grenade you just threw eviscerates someone else coming through the door — these are the strongest points on *Not A Hero's* manifesto. Still, it often feels lacking. Lacking a sense of fluidity in its missions, and lacking the writing or gameplay depth to make its election campaign concept make any real sense. It's flimsy fun — sporadically exciting, and undoubtedly better company than the majority of 2015's other election hopefuls — but like that contingent, unable to walk the walk with any conviction.

[PHIL IWANIUK]



CRYPT OF THE NECRODANCER

IT'S MURDER ON THE DANCE FLOOR.

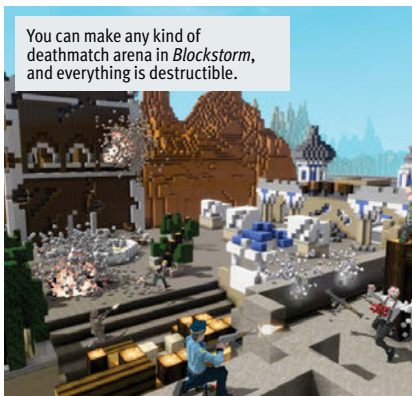
The beat isn't the only thing that's throbbing: our fingers are too, sore from pounding the arrow keys in time to the music, each stroke moving our heroine one square further around this rhythm-roguelike's procedural dungeons. We're entranced. The black magic that makes *Crypt* so spellbinding is how it weaves together the demands of hitting beats with the punishing systems of the dungeon crawler. Like you, every enemy acts in time with the music. But they follow understandable rules, and once you decipher those you can plan your movement patterns to dismantle foes without taking damage. The catch is that you have only the space of a heartbeat to make your next move, lest you drop the beat and your coin multiplier. Mobs and tight spaces, meanwhile, require shifting patterns and tactics on the fly. It's a constant tango with death, in other words, but dancing your way through a level that once stymied you is nothing short of euphoric. Four zones of trials await, with three levels and a boss at the end to overcome in each before you open up the next. As you go, you'll buy or find new gear, which can radically change the challenge; a blood broadsword vampirically sucking back lost health and capable of hitting multiple enemies with each swipe, for example, or new, tougher shovels allowing you to dig ever more freeform paths through these destructible levels. Your freedom doesn't end there. You can bring a friend for local co-op, or hook in a dance mat and work up a sweat. A raft of new characters remix the rules, and you can even swap out Danny Baranowsky's excellent soundtrack for your own tunes, though heaven help you if Dragonforce is your jam. Daily challenges and a level editor, meanwhile, ensure there are reasons to keep resurrecting this from your Steam library. So, yeah, our fingers are sore, but we're not stopping. *Crypt of the Necrodancer* is so good, it's worth risking carpal tunnel for.

[MATT CLAPHAM]



US\$14.99 | PC, Mac
necrodancer.com

You can make any kind of deathmatch arena in *Blockstorm*, and everything is destructible.



BLOCKSTORM

A FIRST-PERSON MULTIPLAYER SHOOTER THAT PUTS THE IMAGINATION FIRST.

It's a fantastic idea in theory: a tight shooter with a focus on user-generated maps and playable characters, borrowing the simplicity and accessibility of *Minecraft*. That's what *Blockstorm* promises, and the game mostly delivers: the map maker is flexible and fun to use after a little bit of tinkering, the playable characters can look like anyone or anything, and the weapons and gunplay are surprisingly impactful and precise for a game like this. As a discrete product you can purchase on Steam, it holds up its end of the bargain. *Blockstorm* would be nothing without a bustling community of content makers though, and in this regard the game is only passable. Sure, it's easy enough to get a match in the game's standard shooter modes (Team Deathmatch mainly) but you may be waiting a while for anything else. Meanwhile, there's some creative ideas spilling into Steam Workshop in the form of thematic maps and ridiculous player skins (Nintendo's *Mario* is there, of course), but I daresay it's going to take a bit more time — and probably a better effort at promoting the game on the developer GhostShark's part — to help *Blockstorm* evolve into the game it deserves to be.

[SHAUN PRESCOTT]

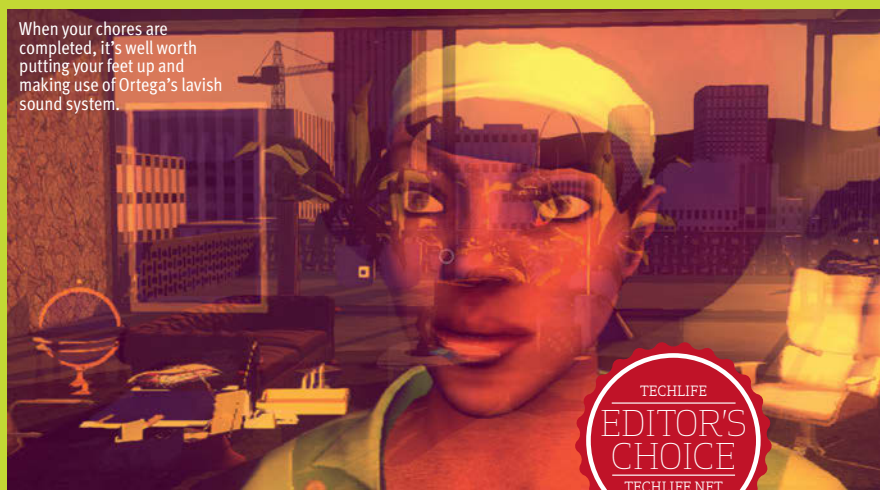


Weapons are pretty standard shooter fare, but they pack a satisfying punch.

US\$6.99
PC
www.playblockstorm.com



When your chores are completed, it's well worth putting your feet up and making use of Ortega's lavish sound system.



Sunset

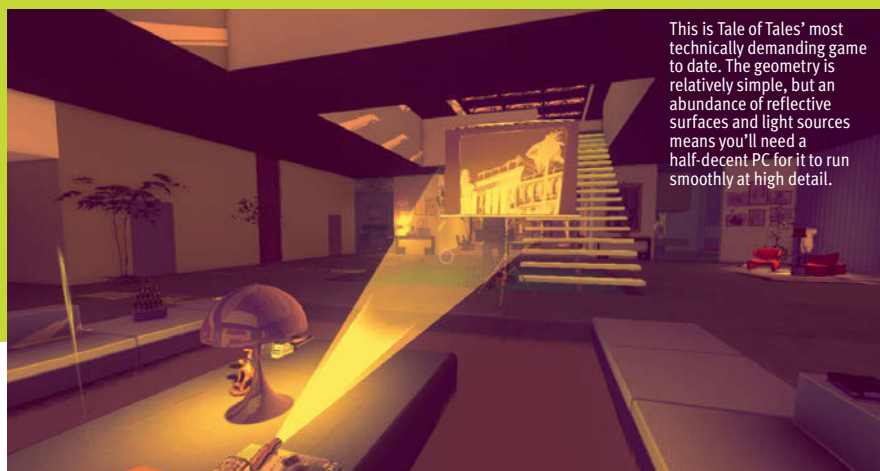
A LIGHT TOUCH.

US\$19.99 | PC
tinyurl.com/ltdyvlq

4 1/2

Cleaner, tailor, interior decorator, PA, confidante, lover: whichever mantle you assume in *Sunset*, there's no role quite as enjoyable as that of observer. As Angela Burnes, a US immigrant in the fictional Latin American state of Anchuria, you're tasked with spending an hour each day in the bachelor pad of wealthy businessman Gabriel Ortega. Usually, this involves cleaning, polishing and tidying up, but your chores allow plenty of time to simply explore this luxurious '70s apartment. There's a natural voyeuristic thrill to snooping, and while Ortega is unknowable initially, the enigma soon fades as you learn more about your employer by examining his décor and detritus. Soon, however, the temperature begins to rise, and we're not talking about a humid Anchurian summer. The region is embroiled in a civil war, with Burnes' brother taking up arms against a despotic regime. At first she sees Ortega's penthouse as an oasis of calm away from the conflict, but perhaps it can be something more: with the chance to respond playfully — even flirtatiously — to his notes, this could yet be an opportunity to influence a powerful ally. The choice between performing tasks coldly or with warmth allows you to feel you're having some small influence on Ortega — and if not that, then at least you can give his home a personal touch. This is a space that changes through

actions both within and beyond your control, leaving you aware you have influence but not domain. You're made to feel liberated and disempowered by turns. A first act that sees the worker-employer dynamic blossom into a relationship — the more earthy exchanges offer a heady frisson not dissimilar to an internet flirtation — segues into a languid second, before the conflict encroaches in discomfiting fashion. One jolt leaves you feeling horribly vulnerable, and just as Burnes finds comfort in her routines amid the chaos, there's a moment of petty callousness that prompts first despondency, then anger. As a haven becomes a fortress, our horror is mirrored in a startling image of Burnes' reflection as she catches sight of a headline on a news ticker and clasps her hands to her mouth. With most key events happening offscreen, we're left to experience the physical and emotional aftermath, literally and figuratively picking up the pieces. The result is an enormously affecting examination of the impact of war. Not on soldiers or politicians, but on everyone else — those who can only watch from the sidelines. *Sunset* is the work of a sometimes inscrutable studio at its most accessible, and its best. At once contemplative and incendiary, this is a quiet game within which burns a fierce revolutionary spirit.



This is Tale of Tales' most technically demanding game to date. The geometry is relatively simple, but an abundance of reflective surfaces and light sources means you'll need a half-decent PC for it to run smoothly at high detail.



All this corporate espionage has inspired us – we'll have that pre-release version of *Uncharted 4* in no time...



Unfortunately, your agents lack the personality to make you care when they die.

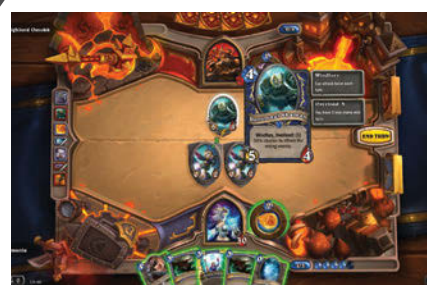
Invisible Inc

IN THE BUSINESS OF SUBTUFUGE.

US\$19.99 | PC
www.invisibleincgame.com

You might have thought that, having reinvented the sneak-'em-up once already in 2012's excellent *Mark of the Ninja*, Klei Entertainment would be satisfied. You'd be wrong. This unwillingness to rest on their laurels is our gain: *Invisible Inc* is one of the most confident and cleverly-designed games you'll play this year. In a noir cyberpunk world, you take the reins of a spy agency under fire. You've been rumbled by the mega-corps and forced on the run, and in just three days' time your vital AI Incognita will run out of emergency power and shut down. The solution? Spend 72 sleepless hours stealing every gadget, weapon and cybernetic augmentation you can from your enemies, before embarking on one last do-or-die mission to destroy the conspiracy against you. It's really a game of heists. From a world map you pick the targets you want to hit — perhaps a secure vault of valuable credits, or a holding cell keeping a skilled operative prisoner — and send your two-person team to get in, get the goods, and get out. Travelling to each one burns time, forcing you to make tough choices: can you afford to take 16 hours getting to that research facility, when you could be slicing data at a server farm in 12? But it's the missions themselves where things get really interesting. The gameplay is more than a little reminiscent of *XCOM*, but it's no cover-based shootout — this is true stealth. If one of your agents gets spotted, they're done for, and keeping out of sight is a serious challenge. It'd be easy to

assume that the game's turn-based nature would defuse the tension, but brilliantly it only increases it. When one wrong move could spell your doom, every decision feels weighty, and when you do slip up, knowing you had all the time in the world to get things right makes defeat that much more painful. And you'll be all the more determined to dive back in and go again. Hack-and-cash *Invisible Inc* is jam-packed with clever gameplay twists that constantly present you with new dilemmas. A resource-based hacking system that makes you choose carefully which consoles and cameras you want to take control of; an alarm network that ratchets up the longer you spend exploring the procedurally-generated maps; guards with heart monitors that, if they're covertly killed, will automatically alert their mates. It all adds up to some impressive strategic depth. Where the game unfortunately lacks is in its roguelike elements. It's built to be replayed, with an impressive amount of campaign options, but there's not enough variety to the randomisation to make each run feel unique. You won't find yourself growing attached to your agents, either — their preset personalities just don't inspire the emotional investment that makes games like *XCOM* so gripping. That extra spark could have made this a game to come back to again and again, but as it is it's still an incredibly engaging experience that any fan of stealth or strategy needs to jack in to. [ROBIN VALENTINE]



HEARTHSTONE: BLACKROCK MOUNTAIN

BURNING DOWN THE HOUSE RULES.

There are myriad discussions to be had about value and if it's right to have to buy additional campaigns for Blizzard's genre-defining digital card-based behemoth. But what it boils down to is this: is this latest batch of single-player content worth it? Because while the cards certainly were back in the first campaign, Naxxramas, the actual content that you played through was less exciting. Thankfully, the same isn't true this time out. While you might come for the new cards, it's the constant surprises thrown up during the 17 boss fights that will keep you engaged. Each of the five wings of *Blackrock* packs a series of battles intricately designed to mess with your playstyle and decks. High Justice Grimstone, an example from early on in the campaign, has a deck rammed with legendaries, forcing you to tinker with your minion loadout, replacing low-cost fodder with more hard removal abilities. Then there's Emperor Thaurissan, a fiery dwarf whose wife, Moira, sits haughtily upon the board from the start of the match. Moira, bless her, only has one attack and three health, but should you take her down Thaurissan gains access to an instant defeat-inducing Hero power, smashing you for 30 damage a pop. Opening up a new enemy and rushing into your first papyry duel with them is heady, almost *Dark Soulsian* stuff, as you reveal a little more of their deck each time you fight and use your accrued knowledge to tweak your loadout ahead of every new attempt. There are instances where you might, by virtue of your already conveniently applicable cards, breeze through a fight first time. But then, there's always Heroic mode to contend with. This throws up even more deck-bending conundrums to shuffle through. The one proviso being that while you can eventually earn bragging rights via a new card back, there's little in the way of reward for replaying on the higher difficulty. Enchant 'n' deck Onto those cards, though. Again there are some genuine surprises in store. Majordomo Executus, for example, will replace your Hero card with the infamously cool Ragnaros. OK, so the fact that your health goes down to eight makes it a tougher sell, but there's no denying the lure of mixing things up. The general makeup of the 31 new cards is a mixed bag. There are essentials to consider for every deck you build from now on. There are cards to earn and then instantly forget. Overall though, especially compared with Naxxramas, the theme is much more palatable. We'd definitely rather spend time in the company of dragons and ale-guzzling dwarves than screeching spiders. There remains a yawning gulf aching to be filled with a new MP game type, though. Arena outstayed its welcome long ago, and while *Blackrock* may hook us back in, there's nothing to compete with the longevity a new multiplayer mode would inspire. Not that we'll ever stop playing for long... [MATTHEW SAKURAOKA-GILMAN]

\$31.99
Android, iOS, PC, Mac
battle.net



DISCOVER
BUILD IT UP, TEAR IT DOWN

Terasology — the most Minecraft looking not-Minecraft game out there.

STEVEN 'BAJO' O'DONNELL is a video game critic and co-host of ABC shows *Good Game* and *Good Game Spawn Point*. His love of games is only surpassed by his love of cats.

[MINE-WHAT?]

Build it up, tear it down.

IT'S EASIER TO DESTROY THAN TO CREATE. BUT IT'S ALSO FUN TO DESTROY.

[STEVEN 'BAJO' O'DONNELL]

AND FUN TO create. And fun to destroy what we've created. And even more fun to destroy what others have created. Video games allow us to do all this, in a variety of settings. So why do we love games which are essentially busy work?

When playing a crafting/building game, you're mostly digging in dirt, hacking at tress, bashing things with rocks, and collecting dead animal entrails to make hats. Hours of hard work to simply build a shack with a door, only to have it destroyed the next time you log in. Or finding

that you've been murdered in your sleep. Or that someone has built a giant penis on your house while you were logged out (this happens ALL the time to me). Penis houses aside, creation is fun and comforting.

Even since *Minecraft*, the juggernaut of user created content building, there has been a flood of similar games. In fact, I don't think we've ever seen so many clones of a single game before. When you look at something like the excellent tablet and mobile app *Survivalcraft* (which is

actually a bit better than the portable *Minecraft: Pocket Edition*), you have to wonder why there aren't lawsuits smacking all of these games down. But I think that *Minecraft* has become such a phenomenon, that it isn't even a game anymore. It's become an industry, a staple, a genre. *Minecraft* is now a category. I like to call them 'Dig 'em Ups'!

Minecraft is even getting its own episodic series form Telltale games, makers of *The Walking Dead* and *The Wolf Among Us*. That blows my mind. A developer, known for making excellent, hard-core



Looking at these little cars... the little bumps in the road. I feel like a kid again. Plus, unlike my real life Lego, *Lego Worlds* doesn't smell like cat pee.

LEGO WORLDS

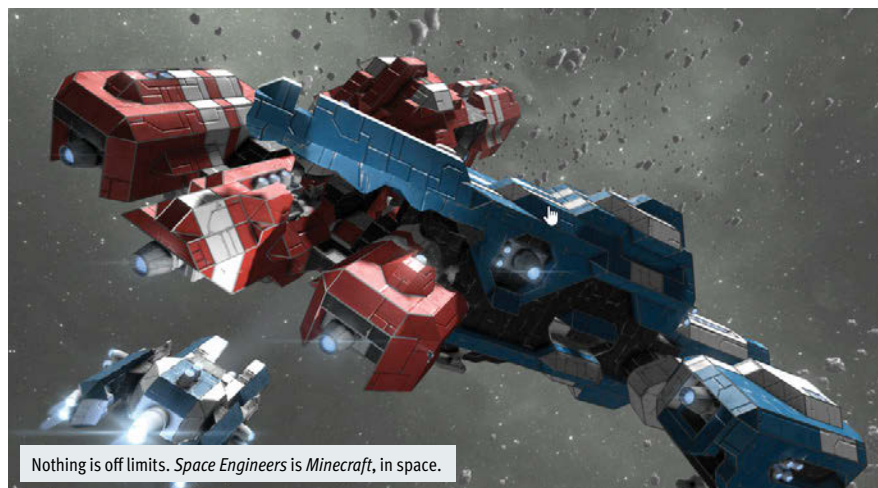
Minecraft is Lego. You can buy *Minecraft* Lego in shops. Finally things have come full circle, and Lego is now *Minecraft*, with *Lego Worlds*. I don't understand why Lego took so long to make a freeform builder. It's only in early access right now, so for example there is no multiplayer yet. Basically, you generate a world, and then just jump right in to start laying bricks. Collecting is as simple as walking over stuff. Building is quick and easy. This will tug at your childhood memories and still has a long way to go. But I think it can only get better.



The trailer and screenshots for this game will make you slam 'add to cart' before you've even read the description. But *ARK* needs some time to optimise and mature.

ARK: SURVIVAL EVOLVED

No video game has yet to truly deliver on the 'dinosaur' experience. But *ARK: Survival Evolved* is trying really hard. Yes, you can build a home in this game. If you don't die before you can get a roof over your head. And you will die. Constantly. The balance is a little off with how many things are trying to kill you. Hunger, thirst, sickness, broken bones, other players online.. and then just when you've got all that sorted — a griffin or T-Rex will come out of nowhere and awkwardly bite you to death. Or even an angry family of Dodo birds. This is a terrifying game with a lot of potential. The biggest issue right now though, is how poorly it runs, even for early access. The best video cards out there will struggle to push this game past 30 frames on medium settings. I hope they pull it off though. I need to ride dinosaurs.

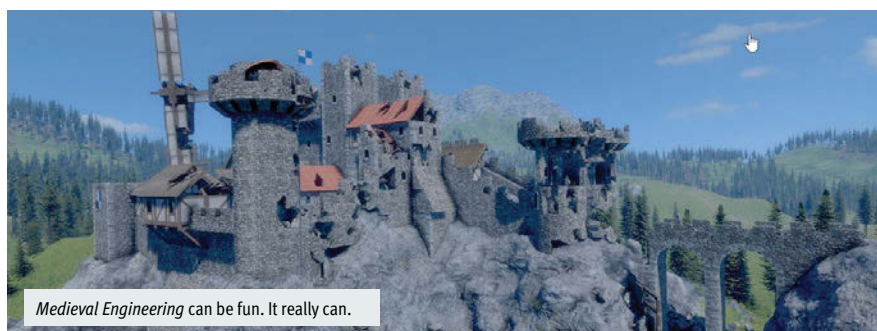


games with tough moral decisions and painful, but glorious outcomes, is doing a *Minecraft* spin-off!

It's not just an onslaught of Dig 'em Ups that have been born from *Minecraft* though. It seems every week, a new type of base building and crafting game pops up online, and they're not all full of survival mechanics (although many are). Perhaps it's the popularity of the crafting building/genre which has inspired developers to push this genre forward. It could also be tech based. These games seem to sit better on PC, where they can update regularly and take advantage of keyboard and mouse.

But there is a magic balance to a great crafting/building game, which is probably why so many are currently in what seems like eternal Alpha/Beta/Early access development stages. Everything has to be just right.

Usually the interface is the biggest hurdle. If crafting a pickaxe can't be done in 3 clicks, it's already too complicated. Managing inventory,



dragging and dropping materials and equipping crafted items may sound like simple user interface stuff to us gamers, but to developers it's a design nightmare. Part of the problem is that we're stupid. If we can't see what we need to move where on our screen instantly, we get frustrated.

Building and crafting games are also about discovery. Giving a player all the materials right from the start is risky. It can be daunting and directionless. But ultimate freedom done right



can also be a beautiful thing, if that's what the developer is going for. Personally, I like solid progression. I like to see a decent selection of schematics or blueprints straight away, so I can have near and distant goals. It's nice to have something to work towards, and then it's nice to blow it up, restructure, redesign and experiment with it. Or put a penis on it.

So what can you play right now that will let you unleash your inner architect? ■



REIGN OF KINGS

Reign of Kings is silly. It's also brilliant. This is by far my favourite builder out there at the moment, for too many reasons to mention. Construction is effortless, and full of wonderful security and safe room strategy options, much like with the survival game *RUST*. The character customisation is hilarious and hideous, the crafting is sensible and fun, and the interface is near perfect. For an early access game, they really are nailing the balance already. But the best part is, the medieval setting allows for some great game mechanics, and hilarious roll playing. It won't be long before you're talking in a silly voice, and dragging other players back to your base for a good old fashioned beheading. If you like *Reign of Kings*, you might always want to check out *Medieval Engineers*, also in early access and focuses more on structural integrity of the building process. And if you like that, you might want to check out their other game, *Space Engineers*. It's a sophisticated spaceship building game, with a solid physics engine and plenty of room for experimentation. It already has a solid online community too.



Bunker down

THE TECHLIFE TEAM REVIEW THE LATEST MOBILE GAMES.



[IOS (ANDROID COMING SOON)]
FALLOUT SHELTER
WHILING AWAY THE APOCALYPSE.
Free with IAP | www.falloutshelter.com

THIS SPIN-OFF *FALLOUT* mobile game offers you the chance to manage one of the iconic RPG series' vaults — the underground bunkers designed to shield their occupants from the dangers of nuclear fallout... not to mention the roving bandits and mutants that come after the apocalypse. *Shelter* takes a fishbowl (or perhaps anthill) approach to game design and it plays similarly to mobile titles like *Tiny Tower* — the idea being that you slowly expand your complex, adding new rooms, assigning your vault dweller's specific jobs (hopefully that match their innate skills) and then check in half a dozen times a day to harvest the water, food and power required to keep the whole vault functioning. If you've played other mobile 'sim builders', so far this'll probably all sound pretty familiar. What makes *Fallout Shelter* a little more unique is the *Fallout* elements it adds, such as mini disasters that your dwellers will need to manage (consisting of things like giant-roach infestations, fires and raider attacks) but, more interestingly, you can send your dwellers out into the wasteland to gather bottlecaps (the currency used in *Fallout's* post-apocalypse society) and other useful items, like clothing and weapons. The latter items enhance people's innate abilities and help them fight off threats (both within and outside the vault) respectively. Things become increasingly



complex as your vault grows, thanks in part to a variety of new room types (around 20 in all) that add training, new ways to attract dwellers and more. There's even a bit of romance as you pair-up dwellers to breed. Thankfully, *Shelter* is very light on the free-to-play mechanics — Bethesda isn't bullishly trying to monetise the experience here, just offering the (completely optional) capacity to buy more resources. The game's iOS only at the moment, but Bethesda's said that it should be coming to Android later in the year. This is a fun little time-waster with some unique hooks to keep things interesting.

[DAN GARDINER]

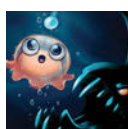
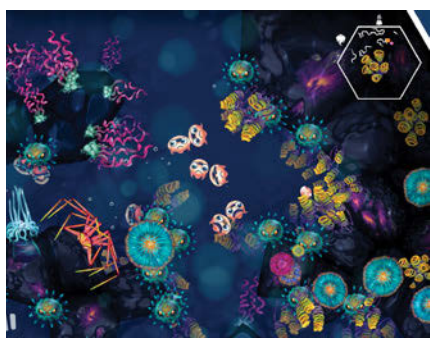
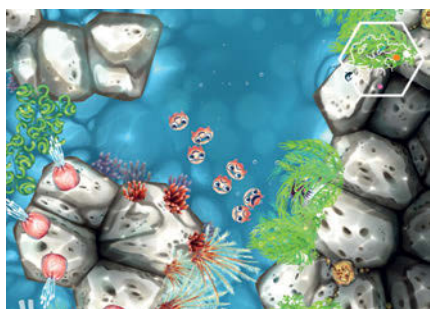


[IPAD, ANDROID TABLETS]
DESKTOP DUNGEONS
THE QUINTESSENTIAL PUZZLE-ROGUELIKE VENTURES BEYOND ITS DESKTOP CONFINES.
\$12.99 | www.desktopdungeons.net

While the name of this game may not seem quite as appropriate now that it's landed on tablets, *Desktop Dungeons* (DD) thankfully hasn't lost any of its charm (or teeth-grashing difficulty) in the transition. Lets back up a little. DD's been out on PC and Mac for a couple of years now and it's become a widely-loved and respected title in that time. While the game does fall under the 'rougelike' genre of RPGs, this is just as much about puzzling as it is slaying baddies with swords and spells. Arguably moreso, in fact, with each dungeon being something of a puzzle that can often only be overcome with a select character class (or two), combined with careful tactics and a sprinkling of luck. Every dungeon starts you off with a new level-1 hero, so overall progression is made by unlocking new, more-powerful classes as well as enhanced equipment and items. And *Desktop Dungeons* is genuinely funny too. It's peppered with loads of tongue-in-cheek humour about roleplaying, video games, monsters and the hideous beasts that are goats. (Yes, goats... play it and you'll understand. Maybe.) The devs have had to make some interface changes for tablet and most of them work adequately, if perhaps not quite elegantly. While \$13 might seem steep for a 'mere' mobile title, we feel it's important to reiterate that this isn't at all a watered-down experience. This is the full-fat, uncut PC game, packing dozens and dozens of hours of challenging play. If you're a puzzle and/or RPG fan, consider this one a must-buy.

[DAN GARDINER]

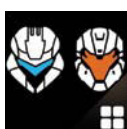




[IOS, WINDOWS PHONE]

JELLY REEFSTRESS LEVELS WILL GET YA,
DOWN WHERE IT'S WETTER.

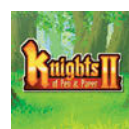
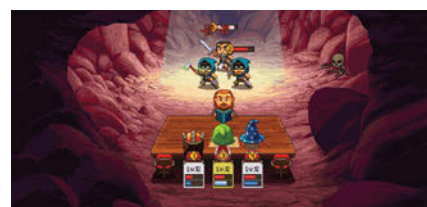
\$2.49 | gameovenstudios.com



[IOS]

HALO: SPARTAN BUNDLETHE MICROSOFT FRANCHISE WAGES
WAR ON ALIEN TERRAIN.

\$12.99 | halowaypoint.com



[ANDROID, IOS, PC]

KNIGHTS OF PEN & PAPER 2

A DICEY PROSPECT.

\$6.49 |

www.knightsofpenandpaper.com

The premise here is simple: there is a smack of baby jellyfish (yes, that is the collective noun) and you — taking on the role of a helpful water current — have to guide them to safety. You swipe to create a current in whichever direction; long, slow ones or short, fast, more forceful ones. Sounds serene, right? Like being in control of a lazy river ride. As if... When you fail, you're sent back to the start of the world. Each portion of the world is procedurally generated, which keeps things from being predictable, and has multiple exits — the world map is a grid of hexagons. And that's enticing, because hazards are everywhere. Predatory rays; sea snakes; squid; sea anemones wield their toxic spikes — especially dangerous when you're maneuvering through tight gaps, of which there are many. If one of your squishy charges takes a hit, they're sashimi. Lose them all and it's game over. There are a couple of spawn points per level that let you recover one jellyfish apiece, but things still feel fraught. It's hard not to feel guilty when your delicate wards pull terrified faces whenever danger is near. The bottom line? Don't let the pretty, tropical-water setting fool you — this is fraught stuff, but highly enjoyable nonetheless.

[EMMA DAVIES]



The story of *Halo* isn't Master Chief saving the Earth from religious fundamentalist aliens; it's about a franchise saving Microsoft's Xbox from the scrap heap. With this *Spartan Bundle* (comprising *Spartan Assault* and *Spartan Strike*), *Halo*'s invaded the alien world of iOS. These sibling shooters distill *Halo* — shooting, driving, shooting while driving — into a tiny package, with mixed results. They look and quack like *Halo*: environments are authentic, guns behave as Xbox veterans would expect and you can even hijack a Wraith tank to rain purple plasma death on the Covenant. But the controls are somewhat ropey. On an iPhone 5S, text is microscopic and thumbs obscure the view, but there's plenty of room on the iPad. *Spartan Strike* is more refined, with an interesting story running parallel to *Halo 2*, but there's little to truly differentiate them. Both offer bite-sized nuggets of confrontation and track high scores for posterity. They put the 'fun' in perfunctory, offering an enjoyable afternoon's blasting. They're recognisably *Halo* yet lack the special sauce of the Xbox series: the compelling space melodrama of Chief and Cortana, the grandiose battles with superior artificial intelligence. You'll be entertained, but may be clamouring for the real thing.

[ALAN WILLIAMSON]



Dungeons are great, huh? There's a reason why so many games rely on them for their RPG trawls. There's a lot that can happen when you delve into that heady mix of sword and sorcery-tinged plundering. So that this sequel to a delightful little tabletop RPG-inspired ditty manages to make these locales a chore is quite the achievement. If you've played the last game then, sadly, you'll already be familiar with almost everything that *KOP&P2* does. You take control of a party of customisable contemporary clichés: the rich kid, the rocker, the goth, and the cheerleader, say. You then guide them through a spoof fantasy tabletop game delivered via dialogue with a bearded dungeon master. When you're not navigating menus to undertake quests, delivered with some appreciable quirk, you're trudging your way through dungeons. It's startling how quickly these become exercises in tedium. Rooms within can either be filled with the same battle you've just fought a hundred times, contain a trap, or, most often, be completely barren. Nothing surprises, and you'll soon be picking the videogame algorithms that procedurally generate these locales out from between your teeth like the turgid remains of a bag of Aldi own-brand bacon Frazzles. Only about half as nourishing. The new developer (Behold Studios have moved on to the more inventive *Chroma Squad*) seems to have been loathe to tinker with the first game's formula, leaving this feeling like a dull also-ran. There's little here to risk the paper cuts for.

[MATTHEW SAKURAOKA-GILMAN]



TEST BENCH

THE HOTTEST GEAR PRESSURE-TESTED



+

"HERE, IT'S ALL JUST BUTTERY SMOOTH GOODNESS."

[GAMING LAPTOP]

Smooth operator

THE TECHLIFE TEAM TESTS THE LATEST GADGETS, PCS AND ACCESSORIES, INCLUDING THE FIRST LAPTOP WITH NVIDIA'S G-SYNC.

ASUS G751JY

G-SYNC IN A LAPTOP? WHAT DEVILRY IS THIS?

STUFF THAT'S GREAT for desktop gaming doesn't always fly for portable PCs. Like 300-watt graphics chips, for instance. Or 40-inch 4K monitors.

In other words, there are limitations that come with compact form factors. One of those, you might have thought, is Nvidia's frame-smoothing G-Sync technology. After all, G-Sync requires a special controller module known as a scaler in desktop monitors. Wouldn't that be tricky to package in a laptop?

Very probably, but we'll never know. Because you can now have G-Sync in laptops without the G-Sync scaler. The ASUS G751JY is proof, courtesy of a newly released software update. That's right, a software update. If you're wondering whether that means the whole special scaler thing was a bit of a scam, the explanation is that laptop displays aren't like desktop monitors. They're controlled directly by the GPU. Actually, it's a little more complicated. There is an interface that sits between the GPU and a laptop LCD panel. But the bottom line is that GPUs have more control of the panel in laptops, critically, they have enough control to deliver the full gambit of G-Sync features and functionality.

The two most important of those features are frame syncing and adaptive overdrive. The first aligns the frame output of the GPU with the

refresh rate of the screen, and thus eliminates both screen tearing and stuttering. You haven't seen truly smooth game rendering until you've seen G-Sync in action.

As for adaptive overdrive, it allows overdrive technology to function in parallel with frame syncing. Conventionally, overdrive improves panel response by essentially supercharging pixels with excess voltage.

Anyway, right now, this new mobile iteration is compatible with about half a dozen laptop models running Nvidia GeForce GTX 980M, GTX 970M and GTX 965M GPUs. For the record, the ASUS G751 sports the 980M; it's pretty darn nippy and a great match for the 17.3-inch 1080p LCD panel.

Also worth noting is the G751's 75Hz panel refresh rate. It doesn't sound like a massive step up from the standard 60Hz. But it does make a tangible difference to the system's overall feeling of smoothness and nippiness.

Anyway, put the 980M together with G-Sync and 75Hz, and you've got yourself a rather splendid gaming portable. The broad vistas of games like *Middle-earth: Shadow of Mordor* and *The Witcher 3* can be quite stuttery on conventional PCs. Here, it's all buttery smooth.

Meanwhile, if this ASUS looks familiar, it's because we've seen the ASUS G750 series previously. Its core talents remain the same. It's a sturdy mobile. The keyboard is solid and the chassis feels up to a few knocks. The trackpad is nicely proportioned, too, and has actual buttons rather than pseudo button areas at the bottom of the pad. Bung in a quad-core CPU, a Samsung M.2 SSD and a metric tonne of memory, and you have one hell of a portable. But, understandably, at one hell of a price (though there are plenty of variations available).

[JEREMY LAIRD]

GENERAL PERFORMANCE	GAMING PERFORMANCE	GAMING PERFORMANCE	GAMING PERFORMANCE
CINEBENCH 11.5 (TOTAL SCORE)	BIOSHOCK INFINITE (AVG FPS)	METRO: LAST LIGHT (AVG FPS)	SHADOW OF MORDOR (AVG FPS)

6.98

84

42

70



ASUS G751JY

From \$3,400
www.asus.com/au

CRITICAL SPECS

Intel Core i7-4870HQ, Nvidia GeForce GTX 980M 4GB, 32GB RAM, 256GB Samsung XP941 SSD, 2TB HDD, 17.3-inch 1080p IPS, 4.8kg.

GENERAL PERFORMANCE	ENCODING PERFORMANCE	ENCODING PERFORMANCE	GAMING PERFORMANCE	BATTERY LIFE	BATTERY LIFE
PCMARK 8 - HOME (SCORE)	X264 HD BENCHMARK 5.01 (AVG FPS) - PASS 1	X264 HD BENCHMARK 5.01 (AVG FPS) - PASS 2	3DMARK - CLOUD GATE (SCORE)	PCMARK 8 HOME (HOURS:MIN)	PEACEKEEPER - WEB SURFING (HOURS:MIN)
3,082	29.88	6.67	5,075	4:41	5:27



Acer Aspire R 14 Playbook

IS THIS A 2-IN-1 OR A 4-IN-1?

THE 2-IN-1 LAPTOP/TABLET hybrid market is arguably one of the brighter spots in PCs these days, and Acer's latest 2-in-1 is this modestly-priced model sporting an unusual 14-inch screen — a size that's reportedly hugely popular in Asia, but which we're not so keen on down under. We can see the appeal though, as it allows you to get a slightly-smaller laptop that's still got plenty of elbow room.

One of the R14's most likeable features are its big, smooth hinges that allow the screen to rotate around 180°, effectively turning it into a tablet with a keyboard on the back. It's a design we've seen numerous times before, but Acer's is one of the better-implemented and stable versions — it's rock solid in laptop mode, without a hint of a screen wobble, even when you're vigorously swiping and tapping at the touchscreen with your fingertip.

Acer advertises this one as being usable in four physical configurations: the standard notebook mode alongside 'display' mode (where the keyboard's keys are flat on the table and the screen is tilted up — good for watching videos or displaying photos or presentations), 'tent' mode where it's propped up on its front edge like an 'A', with the hinge facing upwards, or



pad (aka tablet) mode. And, thanks to that hinge, it is very stable in all those shapes.

But the caveat to that stability seems to be that this isn't the sleekest design around — while it's not ugly, it does perhaps lean a bit more in the direction of utilitarian than ultra-chic, and weighing in at 2.2kg you won't want to be holding it one-handed for more than a few seconds.

The internal hardware is also arguably a bit mismatched. The CPU, for example, is a nice speedy Core i7 part — great for general system speed as well as heavy number crunching, it's the kind of part you'll see in a high-end ultrabook. But elsewhere things are a little lacklustre. The screen's only 1,366 x 768 pixels, for example, and at this price you should really expect a 1080p number. And despite the Nvidia name, that GeForce 820M graphics processor only just scrapes by as a gaming chip; it's a long way off being able to provide 60fps gaming framerates on the R 14, even at its native 1,366 x

768-pixel screen resolution. The 1TB hard drive does offer lots of storage, but you do suffer a little in Windows, as apps take longer to launch and even if you're just searching for an app or game on the Start screen, the results can be a bit slow to actually show up.

Acer's preloaded a few arguably-useful apps along with Windows 8.1 — specifically some video and photo-editing programs from CyberLink (PowerDirector and PhotoDirector, respectively) alongside Dropbox and Foxit's lightweight PhantomPDF app. And of course, you can uninstall them if you don't want them.

Ultimately though, this is a bit of a confusing one. That 2.2kg weight makes the R 14 better-suited to laptop rather than tablet use — however if it's a good laptop you're after, there are better options at this \$1,500 price point. If you do want the option of those other physical configurations then this one isn't a terrible choice, but we wish the internals were a bit better balanced.

[DAN GARDINER]



ACER ASPIRE R 14 PLAYBOOK

\$1,499 (exclusive to JB Hi-Fi) www.acer.com.au

CRITICAL SPECS

Windows 8.1 (64-bit), 14-inch LCD screen @ 1,366 x 768, Intel Core i7-5500U CPU, Nvidia GeForce 820M GPU, 1TB hard drive, 2.2kg.



Philips Fidelio NC1

GREAT IN EVERY WAY, EXCEPT LISTENING TO MUSIC.

We see noise-cancelling headphones like these as primarily an extended-travel luxury, where packing space is at a premium and every inch counts. In that regard, the Fidelio NC1s tick every box. They're a slickly designed set of headphones; small and lightweight enough to not be a burden on the head, cleverly designed so all controls are within easy reach and feel natural to use, plus they fold away into a tiny package to not be a burden on precious travel cargo space. And, critically, the noise-cancelling itself does a decent enough job at blocking out the unwanted hum. They're not best in class in the noise-cancelling stakes — that honour still goes to the amazing Bose Quiet Comfort 25 — but when you consider these Philips cans are \$100 cheaper, it's not too shabby.

A full charge of the battery will get you around 30 hours of music and noise-cancelling and it's worth noting that even if the battery dies before you reach your destination, the headphones will still work—you'll just have to put up with the external noise leaking in.

Sadly for this set of headphones, their sound is their worst feature. Everything we threw at them came back sounding washed out and lacking depth in everything but the upper range. They're otherwise a great pair of headphones... but if you can't really enjoy them for their primary function, it ultimately makes them a tough recommendation. If you're in the market for noise-cancelling headphones, we'd still recommend forking out the extra cash and going with the Bose.

[TROY COLEMAN]



Audio Technica ATH-R70x

A NEW RIFF ON AN OLD CLASSIC.

WE'VE TAKEN A look at several headphones and gaming headsets from Audio Technica that feature the paddle fit headband and it's still a source of contention in the office. Essentially, the cans are mounted onto an oversized headband and it's only the padded, spring loaded paddles that make contact — and self adjust — to the noggin, meaning there's no need for adjustment sliders on each side. It's quite literally a one size fits all system and — if you're not quite picking it up from my excitable tone — this reviewer loves it. The R70x is also a step away from AT's traditional twin strut headband, instead going with a semi-flexible aluminium band. It has to be said that from a material standpoint, it's lacking that refined, exclusive luxury that the steep entry-fee suggests. Also (while we were too scared to test it) it feels as though it's one rage-bend away from losing form permanently. But otherwise, these sit alongside SteelSeries' Siberia V2 as the most comfortable, long-term headphones we've ever tested.

Onto those monster cans... just, wow. These open-back headphones are reference class and geared toward studio mixing and audiophile precision, without any additional bass boosting or the compression that features in many popular brands. They're super crisp and clear and the sound quality is really dependant on quality of source they're fed — so aiming for anything lossless is highly recommended. Outside of music, the R70x shone in PC gaming (as long as you can do without comms). I'm in love.

[TROY COLEMAN]



PHILIPS FIDELIO NOISE CANCELLING HEADPHONES

\$299
www.philips.com.au

CRITICAL SPECS

40mm drivers, 7Hz–25KHz, 107dB sensitivity, 16 ohms impedance, airline plug, protective carrying pouch, USB charge cable, 191g.



AUDIO TECHNICA ATH-R70X

\$499
audio-technica.com.au

CRITICAL SPECS

45mm drivers, 5Hz–40KHz frequency response, 99dB sensitivity, 470 ohms impedance, protective carrying pouch included, 210g without cable and connector.





Bebop Drone with Skycontroller

ANOTHER PARROT QUADCOPTER HITS THE SKIES, BUT IS THE BEBOP FOUR TIMES AS FUN?

PARROT DRONES HAVE finally grown up. We're used to slightly childlike toys such as the Rolling Spider topping Christmas lists, but the Bebop Drone is about to claim that spot. It's a diminutive drone, but it's got some serious kit on board.

In a body section that's just a few inches long, you get a substantial battery and an HD (1080p) video camera that shoots 14 megapixel stills. It can be bought just as a drone (\$610), but the Skycontroller bundle gives you a traditional twin-stick remote control unit capable of generating its own Wi-Fi hotspot, enabling you to fly up to a claimed 2km (and it went well beyond our sight in testing!).

The Skycontroller is a big unit and you'll need the shoulder strap as it's heavy too. You can secure an iPad or iPhone into the middle, giving you a live view from the Bebop's camera. If Parrot's FreeFlight software wasn't so good, this could seem gimmicky, but it's delivered with aplomb. Freeing yourself from the constraints of touch control (the only option if you haven't got a Skycontroller) makes delicate adjustments a cinch.

There can be a slight delay in horizontal control when starting from a landing position, but once in flight the Skycontroller's twin sticks make drone control far easier than touch. It's quite a thrill too when you get the drone out of sight and you're flying like a real drone pilot, by just looking at a screen. Thankfully, there's a button on the Skycontroller that returns the Bebop to its starting position if you ever feel like it's lost.

Naturally, the view from the camera has a slight frame rate issue so you still need to be pretty confident of the kind of area you're flying into. The drone should only be used in the lightest of winds too.

The Bebop itself is light but can withstand some pretty serious knocks. The only weighty component is the battery (lasting about 12 minutes), but its clip mechanism is flimsy. It doesn't exactly click into place; it comes out too easily and looks untidy.

These small criticisms didn't dent our enjoyment, however. If you can afford it, you're in for some brilliant aerial antics.

[CHRISTIAN HALL]



Acer S277HK

AN AFFORDABLE 4K MONITOR WITH AN ELEGANT DESIGN.

ACER'S 27-INCH DISPLAY has a Mac-like design with an aluminium frame and brushed-metal finish. The panel measures 20mm thick, while the border round the screen is a mere 6mm, so the desktop almost goes from edge to edge. Unfortunately, the monitor sits quite low, and you can't adjust the height. The buttons for the on-screen controls are tucked away under the right edge of the screen, which makes it tricky for navigating menus. The controls include useful options, though, such as preset modes for viewing graphics and video, and a blue-light filter designed to ease eye-strain.

We can't fault the image quality. The S277HK uses IPS (in-plane switching) to provide excellent all-round viewing angles, along with bold colours and strong contrast that make the most of the 3,840 x 2,160 resolution. The screen also boasts a glare-reducing matt finish.

The S277HK supports HDMI 2.0, so it can display a 4K image with a 60Hz refresh rate — note, though, that you can only currently only display 4K video at 30Hz over HDMI 1.4. Fortunately, the monitor includes two DisplayPort 1.2 interfaces — one each for full-size DisplayPort and Mini-DisplayPort/Thunderbolt connection — allowing DisplayPort 1.2 equipped machines (which are far more common than those with HDMI 2.0) to display 4K video at 60Hz. The built-in speakers work quite well, producing respectable sound quality and volume. There's a DVI port, but it's a shame there isn't a second HDMI, and the S277HK doesn't offer any USB hub functionality, either.

So while connectivity could be improved, the S277HK offers excellent image quality, making it an attractive option for any 4K-hungry PC (or suitable Mac) user.

[CLIFF JOSEPH]



BEBOP DRONE WITH SKYCONTROLLER

\$799
parrot.com



CRITICAL SPECS

802.11ac connectivity (MIMO dual-band — 2.4 and 5GHz), 1,920 x 1080 at 30fps (video) camera resolution, 4,096 x 3,072-pixel stills, 8GB storage, 80 x 320 x 36mm, 400g.



ACER S277HK

\$915
www.acer.com.au



CRITICAL SPECS

27-inch, anti-glare IPS panel, 3,840 x 2,160-pixel resolution, 1 x HDMI 2.0, 2 x DisplayPort 1.2, 1 x DVI, 1 x 3.5mm audio out.



[PROTECT YOUR STUFF]

Smarten up your home security

THESE HIGH-TECH 'INTERNET OF THINGS' GADGETS ENABLE YOU TO KEEP TABS ON YOUR HOME, FAMILY AND PRECIOUS POSSESSIONS NO MATTER WHERE YOU ARE IN THE WORLD.

[JENNETH ORANTIA]

UNLESS YOU'RE LIVING large in a big house with plenty of nice things, it can be hard to justify splurging on a professional security system. But that doesn't mean you need to give up on domestic safeguards altogether.

The latest smart home technology enables you to add security devices to your house without the need for a steep investment or professional installation, making it suitable for anyone — even those in a rental property or share house.

There are gadgets available for all of the different types of security. IP cameras let you tap into a live video feed of your house at any time and send digital stills and video to your smartphone or tablet whenever motion is detected, while motion sensors placed

throughout your house can give you a heads up if there's activity when there shouldn't be. Smart switches, on the other hand, enable you to remotely turn off any fire hazards in your home like heaters, irons and hair straighteners.

There are also plenty of variations on front door security, between sensors that monitor when the door is open and closed, smart deadbolts that you can open with your phone and high-tech doorbells that incorporate HD video cameras and two-way microphones.

Sen.se Mother

MOTHER KNOWS BEST, BUT SHE'S A BIT OF A HOMEBODY.

The Sen.se Mother is a quirky Internet of Things device that's designed to keep tabs on your family both in and out of the house — much like any eagle-eyed matriarch.

A creepy Russian doll-like base station connects to your home Wi-Fi network, and using four reprogrammable battery-powered sensors (referred to as cookies), you can collect a wide variety of information such as presence, steps, motion and temperature.

The variety of applications that you can assign to each cookie is what makes the system so interesting. While you only get four in the pack, you can double up on monitored activities for each one. You could, for instance, have one cookie tracking your physical activity and presence, the latter of which keeps tabs on whether you're home or not. Another cookie could monitor the front door and measure the temperature of the front room, with an alert being sent to you if it goes above or below the expected thermal conditions.

Other applications include a sleep tracker, a tooth-brushing tracker and a movement sensor that tells you whether something has moved or not (ie a jewellery box or TV). All of the activity is displayed and analysed in the Flipboard-style Senseboard, which you can also view through the Pocket Mother app.

HOW WE TESTED

All devices were tested in a two-bedroom apartment with an 802.11ac Wi-Fi network run by a Linksys MAX-STREAM AC2600 router. An iPhone 6 Plus running iOS 8.3 was used to test the mobile companion apps, and a handyman was used to connect the Belkin WeMo Maker, Kwikset Kevo and Ring. All devices had latest firmware applied before testing.

10

SMART SECURITY
DEVICES TESTED



SEN.SE MOTHER

\$379.95
sen.se

CRITICAL SPECS

Base station supports up to 24 cookies, comes with four cookies in the box, each cookie uses a CR2016 coin cell battery, up to one year of battery life, cookies have 10 days worth of memory.



Belkin NetCam HD Wi-Fi Camera with Night Vision

HIGHLY VERSATILE SECURITY SOLUTION AT A REASONABLE PRICE.

For the asking price, the NetCam offers a decent swag of features: night vision, two-way intercom, and a 95-degree diagonal field of view. Using the built-in stand, it's easy to sit it up on a flat surface; alternatively, it comes with the bits and bobs for wall mounting. Once it's all in place, you can monitor the room in real-time through the live 720p high definition video feed in the NetCam app, take screenshots or video, and talk to anyone in the room.

The headline act is its ability to detect motion in the room and send you screenshots of any activity. Unfortunately, you'll need to plump for the iSecurity+ Premium Service (US\$10 a month or US\$100 a year) if you want to upgrade those stills to video recordings, but there's a 30-day trial available if you want to try it beforehand.

It's also compatible with the Belkin WeMo ecosystem, so you can pair it up with other devices to create even smarter home security setups. You could, for instance, set it up to not only record video if it detects motion at night, but also turn your WeMo Smart LED Bulbs on — sure to give any would-be thief a fright! Strangely, there's no option to set the NetCam to record video on a schedule, which means you'll need to turn it on and off manually.



BELKIN NETCAM HD WI-FI CAMERA WITH NIGHT VISION

\$179.95
www.belkin.com/au

CRITICAL SPECS

720p HD video resolution, two-megapixel stills, 95-degree diagonal field of view, video notifications for US\$10 a month, infrared LED, two-way intercom, night vision to 8 metres.



Belkin WeMo Maker

ONE OF A KIND SMART HOME GADGET FOR TINKERERS.

Belkin's newest addition to the WeMo fold is more of an advanced do-it-yourself solution. It's designed for adding smarts to motorised home devices like garage doors and roller blinds, but unless you're a hobbyist that knows your way around wires, you're best advised to get the help of an electrician.

The WeMo Maker is a small box that connects to your Wi-Fi network with relay and sensor ports. The latter is used for connecting various types of sensors (such as light, moisture and magnetic) that act as triggers for the electrical relay.

There are a few ways to set the WeMo Maker up with a garage door opener. We plugged a magnetic sensor (less than \$10 from eBay) into the sensor port to detect when the garage door had been left open, and ran the two existing garage door wires into the relay port. From there, it was a matter of connecting the WeMo Maker to our Wi-Fi network and setting up rules accordingly.

One of the possibilities getting it to alert you whenever the garage door is open for more than five minutes, or setting up a rule through the IFTTT cloud-based automation service to automatically open the garage door whenever you're nearby using your smartphone's proximity.



BELKIN WEMO MAKER

\$149.95
www.belkin.com/au

CRITICAL SPECS

Relay port, sensor port, compatible with 5v digital sensors, 3-foot cable.



Kwikset Kevo

A GLIMPSE INTO THE FUTURE OF FRONT DOOR SECURITY.

The Kwikset Kevo upgrades the first line of defence in your domicile: your front door lock. Once you replace the existing deadbolt with the Kevo, you'll be able to open the door with your smartphone in your pocket simply by tapping on the Kevo with your finger.

Through the app, you can give out (and revoke) virtual 'eKeys' to friends, family, and temporary guests like babysitters and tradesmen, as well as keep track of everyone's comings and goings. If your phone is out of battery — or you misplace your phone altogether — you can use the supplied Bluetooth key fob or traditional deadbolt key as a backup. You can also sign in to the Kevo app from someone else's smartphone.

Alas, the Kevo isn't for everyone. Those with an iPhone 4S, iPad mini or third-gen iPad can use it, but the pool of compatible Android devices is much shallower — only a handful of Android 5.0 Lollipop devices. If you use any other lock for securing your front entrance, such as a screen door or door lock, the Kevo also loses much of its shine, as having to fumble for your keyring anyway defeats its purpose.



KWIKSET KEVO

\$299.95
store.apple.com/au

CRITICAL SPECS

Uses four AA batteries for up to 1 year battery life, comes with two Anytime or Scheduled eKeys, unlimited guest eKeys, a Bluetooth key fob and traditional key, additional keys \$2.49 each, uses military-grade PKI encryption.



Netgear Arlo

A MAJOR DISRUPTOR TO THE HOME SECURITY SPACE.

The Arlo's biggest advantage is that it's a wireless IP camera system. Add to that the IPX5 rating for extreme weather conditions, excellent night vision capabilities and the ability to view multiple camera feeds at once, and it makes Netgear's entry to this category the clear winner — with a couple of major caveats.

Setting the router-sized base station up was a major pain (the app-based setup wizard failed to advise that turning our Wi-Fi router off and on again would be necessary), and the app itself is far from user-friendly. However, adding the palm-size cameras was easy; using four CR123 batteries, the batteries can run wirelessly for up to six months before needing new cells.

The premium pricetag is easier to swallow when you take into account the free video alerts. The basic service includes seven days and up to 1GB of cloud storage, and there are two other tiers with more storage and support for more than five cameras. The quality of the 720p HD video is reasonably sharp, and thanks to the ultra-wide 130-degree field of view, it can capture a whole room from almost any angle.

The two major shortcomings are that it doesn't connect to any other smart home devices or ecosystems, and it lacks audio support for two-way intercom.



NETGEAR ARLO

From \$349
www.netgear.com.au

CRITICAL SPECS

720p HD video resolution, two-megapixel stills, 130-degree field of view, free video notifications up to 1GB, 12 infrared LEDs, no audio, night vision to 25 feet, 100m range from base station, 4-6 months battery life using four CR123 batteries.



Belkin WeMo Switch and Motion Kit

MORE THAN THE SUM OF ITS PARTS.

If you suspect your flatmate is sneaking into your room while you're at work, the WeMo Motion can be set up to catch him or her in the act. It consists of a relatively small sensor tethered to an over-sized plug, and it detects motion within three metres of the sensor. Push notifications are sent to your mobile device (via the iOS/Android WeMo app) whenever it detects motion, and you can configure it to only kick in during the days and times when there shouldn't be any activity.

The beauty of the Motion isn't so much its functionality — which isn't unique — but the fact that it integrates with both the WeMo ecosystem and the iFTTT web-based automation platform.

The former means you can create rules that connect multiple WeMo devices together, such as automatically turning a WeMo Smart LED Bulb on when motion is detected in the room after sunset. Linking it to iFTTT lets you do even smarter things.

Unfortunately, you can't buy the WeMo Motion on its own — it's only available in a kit with the WeMo Switch. It doesn't work in low lighting, either, which limits its nocturnal capabilities.



BELKIN WEMO SWITCH AND MOTION KIT

\$139.95
www.belkin.com/au

CRITICAL SPECS

10 foot range, 6-inch power cord, Wi-Fi.



D-Link HD Wireless N Outdoor Cloud Camera DCS-2330L

COMBINES VIDEO MONITORING OVER THE INTERNET WITH LOCAL VIDEO STORAGE.

One of the disadvantages of keeping surveillance videos stored in the cloud is that you're usually beholden to a third party for storage costs. The D-Link DSC-2330L sidesteps the issue by storing all of the videos locally on a microSD card. Storing videos locally means you don't have to pay monthly charges and you're limited only by the size of your microSD card. On the other hand, a thief could easily steal the camera along with the rest of your worldly possessions. You can still tap into a live video feed remotely, of course, and you'll also get instant notifications when it detects motion like any other IP camera. As far as the rest of its features go, the DSC-2330L provides decent bang for buck. The IP65 weatherproof housing means you can set it up outside your home (although it's not battery-powered like the Arlo, so you'll need to run a power cord into the house). The free D-ViewCam desktop software lets you monitor up to 32 cameras at a time, and if you upgrade from the free mobile app to mydlink+ for \$1.29, you can also view multiple cameras on your smartphone or tablet. Unfortunately, it isn't compatible with D-Link's newer smart home devices like the motion sensor and smart plug.



D-LINK HD WIRELESS N OUTDOOR CLOUD CAMERA DCS-2330L

\$229.95
www.dlink.com.au

CRITICAL SPECS

720p HD video resolution, one-megapixel stills, 57.8 degrees horizontal field of view, 37.8 degrees vertical field of view, videos stored locally on microSD card, IP65 weatherproof housing, infrared LED, two-way intercom, night vision to 15 feet.



D-Link mydlink Wi-Fi Smart Plug DSP-W215

SMART, BUT NOT AS CLEVER AS THE OTHER KIDS IN CLASS.

Ostensibly, 'smart plugs' aren't designed so much for home security as they are for being able to turn your domestic devices on and off remotely or on a schedule. But you can jury-rig them to perform some security functions.

Smart plugs add a bit of intelligence to standard 'dumb devices' by sitting in between the power outlet and the device. For appliances that pose a fire hazard like irons, hair straighteners, hair dryers and heaters, you can skip the 'did I turn it off' dilemma when you leave the house by simply switching them off from within the mobile app from anywhere. Additionally, the DSP-W215 offers built-in thermal protection that automatically switches off any devices that are over-heating.

You can also pair the smart plug with D-Link's Wi-Fi Motion Sensor to do simple things like turn a device on or off when it detects motion, which can be used for theft deterrents like turning on a lamp or radio. However, you can't set these rules up to kick in on a schedule like you can with the Belkin pair, as the devices can only be set to a schedule when working individually. Like the other D-Link devices, it only talks to other mydlink devices, which are few and far between.



D-LINK MYDLINK WI-FI SMART PLUG DSP-W215

\$89.95
www.dlink.com.au

CRITICAL SPECS

Maximum load of 16A, 250V, maximum 5w power consumption, power input: 100v to 240v AC, Wi-Fi.



D-Link mydlink Wi-Fi Motion Sensor DCH-S150

IMPRESSIVE, BUT DOESN'T GET ALONG WELL WITH OTHERS.

D-Link's entry into smart motion sensors is a lot newer than Belkin's current offering, and as such offers a smaller, more self-contained solution (about the size of an international plug adaptor) that doesn't block off neighbouring power points.

In some respects, it's better than its Belkin rival. It covers two and a half times more range (or enough to monitor the entirety of a small room), and since it can be purchased on its own, it's cheaper to acquire than the Belkin WeMo Motion. It also offers the ability to adjust the motion detection sensitivity, and thanks to the passive infrared sensor, it's a lot better at picking up motion at night.

The DCH-S150 falls down when it comes to expandability. This may not be a huge concern if you're only interested in motion detection, but being able to connect it with other devices and platforms is where the magic really happens. Not only is the mydlink ecosystem limited to just the 'smart plug' (compatible IP cameras are 'coming soon'), but it also lacks support for the popular IFTTT web-based automation platform. The app is also buggy, frequently requiring you to restart it before changing settings or adding new rules.



D-LINK MYDLINK WI-FI MOTION SENSOR DCH-S150

\$89.95
www.dlink.com.au

CRITICAL SPECS

26 foot range, passive infrared sensor, Wi-Fi.



Ring Video Doorbell

PLENTY OF ROOM FOR IMPROVEMENT.

The Ring brings your old-fashioned doorbell into the 21st century, adding a 720p HD video camera, two-way intercom, and internet connectivity. It works whether you're home or on the other side of the world: as soon as someone presses the doorbell (resulting in two loud chimes), it initiates a video call with your smartphone (using Wi-Fi or 3G/4G) so you can speak with whomever's on your doorstep.

You can also set up the motion detection to automatically initiate a video call when someone comes to your front door. Either way, it will record video and store it on Ring's servers, but after the first 30 days, you'll need to pay US\$3 a month (or US\$30 a year) to take advantage of this feature.

The Ring can be hooked up to your existing doorbell wiring, in which case you don't have to worry about keeping it powered. Otherwise, the internal rechargeable battery is good for up to a year of use.

It's a great idea, but it wasn't so reliable in practice. The lag time between visitors pressing the doorbell and the video feed coming up on your smartphone can be as long as 30 seconds, which is long enough for a visitor to decide no one's home. A few times, the call didn't come through at all.



RING VIDEO DOORBELL

\$349.95
www.ring.com

CRITICAL SPECS

720p HD video resolution, two-megapixel stills, 180-degree field of view, US\$3 a month for cloud video storage, weatherproof housing, infrared night vision LED, two-way intercom, 5200mAh battery for up to one year of use.

[HOW TO]

DIY home security for under \$100

IT WON'T MATCH THE LEVEL OF SECURITY OFFERED BY A PROFESSIONAL MONITORED ALARM SYSTEM, BUT FOR KEEPING NOSY FLATMATES AND FAMILY MEMBERS OUT OF YOUR ROOM, THE BELKIN WEMO SWITCH AND MOTION KIT CAN BE SURPRISINGLY EFFECTIVE.

[JENNETH ORANTIA]

SETTING UP A fancy 'Internet of Things' security solution at home doesn't have to cost much. For less than a hundred bucks, you can have a surprisingly versatile system in place that can do everything from sending an email to your flatmate to get out of your room to turning on your lamp or radio to scare off intruders.

I recommend the Belkin WeMo Switch and Motion Kit for those on a tight budget (street price is around \$95), as you can do far more with this than the D-Link equivalent. This is because it's part of the Belkin WeMo ecosystem, which currently offers the broadest range of DIY smart home gadgets available off-the-shelf in Australia. Second, it's

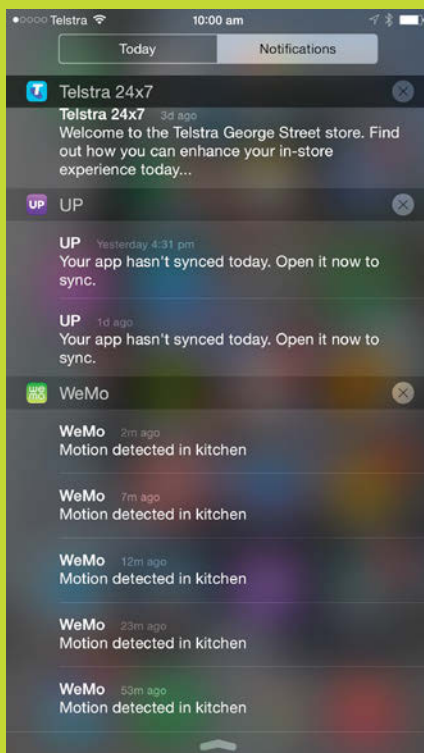
compatible with the IFTTT (If This, Then That) web-based automation platform, which enables you to tie the devices in with a broad range of cloud and smartphone services.

On its own, the WeMo Motion is quite handy. You get instant alerts via the WeMo mobile app whenever it detects motion, and you can set it up on a schedule so that it only sends you motion alerts during certain days and times.

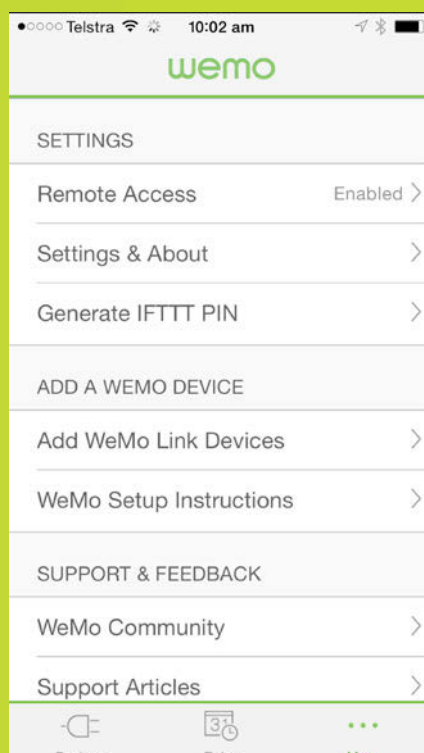
But it's when you connect the WeMo Motion (and indeed, every other Belkin WeMo device) to IFTTT that things really get interesting. To do this, you'll need a free IFTTT account (if you don't already have one). Head over to www.ifttt.com and click



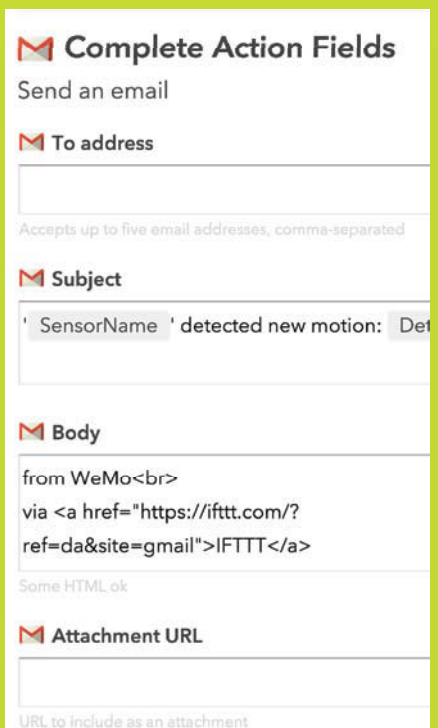
The Pure Pop Midi digital radio works well with the WeMo Switch, as playback can be turned on and off from the power switch.



The WeMo app will send you instant alerts whenever the Belkin WeMo Motion detects activity in the room you set it up in.

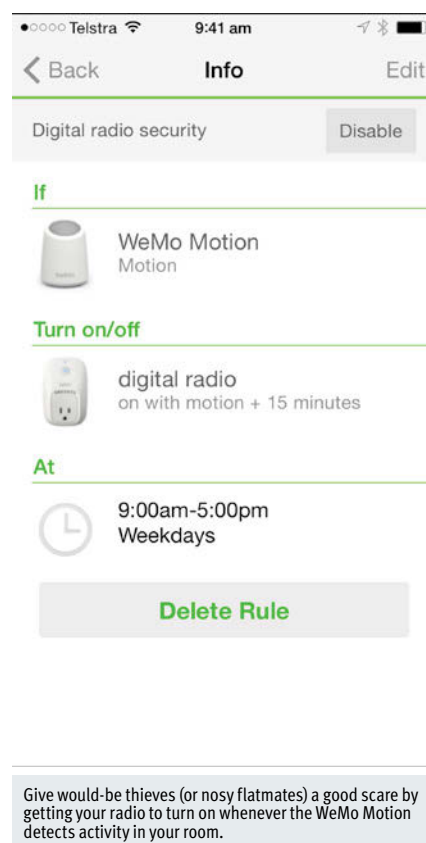
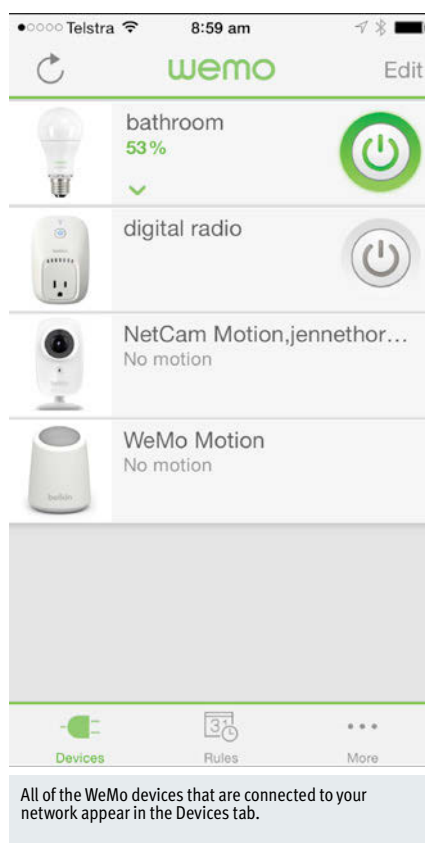


Connect your WeMo devices with the powerful IFTTT platform by generating an IFTTT PIN from the WeMo app's settings page.



Send threatening messages to your flatmates or family members whenever they come into your room using the powerful IFTTT platform.

“CAN DO EVERYTHING FROM SENDING AN EMAIL TO YOUR FLATMATE TO GET OUT OF YOUR ROOM TO TURNING ON YOUR LAMP OR RADIO TO SCARE OFF INTRUDERS.”



the ‘Sign up’ button in the top right to create a new account.

Once you’re set up, go to the WeMo app and click the ‘More’ tab at the bottom. Tap on the ‘Generate IFTTT’ pin option, and you’ll see a WeMo activation PIN. Click on the ‘Manage my WeMo Channels’ link, and this will take you to an IFTTT sign-up page. Tap the ‘Sign in’ link and enter the credentials you used in the previous step.

You’ll now be able to create ‘recipes’ that use the WeMo Motion’s detection as a trigger for other actions. If you wanted to create a rule that emailed your flatmate or family members to get out of your room while you’re out of the house (far more effective than the hand-drawn ‘Stay out of my room!’ signs you may have used as a kid), click the ‘Create a recipe’ option from the desktop browser interface, then click the blue ‘this’ link to start the process. Enter ‘WeMo Motion’ in the search field, then select the ‘Any new motion’ option. Select ‘WeMo Motion’ under the ‘Which sensor’ option, then select ‘Create Trigger’.

Next, click the ‘that’ link and type ‘Gmail’ into the search field. Click ‘Gmail’ in the results, then ‘Send an email’, which lets you send a message to up to five people. If you don’t have a Gmail account setup with your IFTTT account already, you’ll need to configure one before proceeding. For this recipe, you can get it to send an email to your flatmate and yourself, change the subject heading to something antagonistic like ‘I busted you going into my room!’, put

whatever idle or real threats you like in the body fields, then hit the ‘Create action’ button. The final step is clicking the ‘Create Recipe’ option.

The only downside to this setup is that you can’t set the rule to operate on a schedule. But you can take advantage of the IFTTT mobile app as a workaround. Using the app, you can easily switch recipes on and off, so you’ll just need to remember to turn it on and off manually. For this sort of thing, however, you’ll probably only need to scare your flatmate the one time before he or she stays out of your room for good.

BETTER TOGETHER

Combining the WeMo Motion with the WeMo Switch allows for some interesting security combos. For daytime security, ie when you’re at work or on holidays, you could set the pair up to play music or turn the lights on whenever it detects motion.

The only downside with the current WeMo Motion is that it doesn’t have any kind of night vision, so it won’t be any help when it’s pitch black. For this, you’ll need to either upgrade to the Belkin NetCam HD Wi-Fi Camera with Night Vision (which comes with a built-in motion detector) or wait for the upcoming WeMo Room Motion Sensor.

Let’s go through setting up the WeMo Motion and Switch to turn on the radio whenever it detects motion. Once both devices are setup on your home network and appear in the WeMo list of devices, switch to the ‘Rules’ tab. Tap the ‘+’ icon in the top

right, then select the ‘Control a Device > With Motion’ option. Select the ‘WeMo Motion’ under ‘IF’, then select ‘WeMo Switch’ (or whatever you named it during setup — I used ‘digital radio’).

Tap the ‘on’ option and select ‘15 minutes’ for it to turn off automatically when it doesn’t detect motion in 15 minutes. In the ‘When’ field, you can select the days and times this kicks in (ie when you’re at work) when you turn the ‘All Day’ option off. Finally, give the rule a good name (such as ‘digital radio security’), then tap Save.

The final step is plugging in your audio player. You’ll need one that turns on directly into playback mode rather than standby mode. In other words, if the power is turned off while it’s playing music, it resumes playback when power is restored. I used the Pure Pop Midi with Bluetooth, a portable digital and FM radio, because it satisfied the first requirement, and it’s also small enough to hide away in a corner.

Once you plug the audio player’s power plug into the WeMo Switch’s power input, you’ll be good to go. For extra points, you can boost the volume output of the audio player to really give would-be thieves a scare by connecting it to a set of external speakers. I connected a male-to-male 3.5mm audio cable to the Pure’s headphone jack and the line-in of a Sonos Play:5, then switched the Sonos’ playback mode to ‘Line-In’ using the Sonos mobile app. ■

WHAT WOULD STEVE DO?

NEW!

COLLECTABLE POSTERS!



ISSUE
02

THE BUILDER'S GUIDE TO

MINECRAFT

PS4 • XBOX ONE • PC • PS3 • 360 • PS VITA • iOS • ANDROID

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with our in-game
party tips

MINECRAFT BAKE-OFF!

How to bake
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02
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AT ALL GOOD
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SUPERCHARGE YOUR SMARTPHONE

GO BEYOND THE BASICS: THE POWERFUL APPS, SECRET
TECHNIQUES & ESSENTIAL ACCESSORIES THAT CAN
TRANSFORM YOUR PHONE.

[IPHONE EASY]

Upgrade your iPhone to incredible

BY NOW, YOU'VE MORE THAN LIKELY MASTERED THE BARE BASICS OF USING YOUR IPHONE OR IPAD. HERE ARE OUR TIPS TO GO THAT NEXT STEP FURTHER.

[JENNETH ORANTIA]

MAKING PHONE CALLS, snapping photos, installing apps and web browsing should all be second nature — and you might have even figured out a few additional tricks like how to capture screenshots and organise your apps into folders.

But are you really making the most of your phone or tablet? Apple has added hundreds of new features to the iOS platform over the last couple of years, and many of these aren't immediately obvious unless you know where to look.

Here are a handful of tips designed for beginner and intermediate users that will take your daily usage to the next level. Before starting, make sure you're running the latest version of iOS by going to 'Settings > General > Software Update'.

01 CLASSIC NAVIGATION TRICKS

Before we jump into the newer features in iOS, it's worth rehashing some of the older tricks that you still may not be familiar with. One of our favourites is the 'tap to top' feature, which will shoot you to the top of whatever

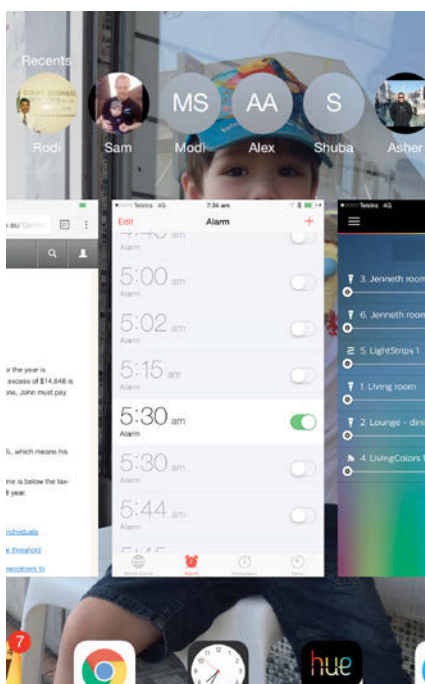
screen you're in to save you from scrolling. This works universally across stock iOS apps, and also many third party apps like Facebook and Gmail.

Another obvious trick that's surprisingly overlooked by many technophobes is double-pressing the home button to launch running apps. Swiping up from any app thumbnail closes the app properly. In iOS 8, this feature has been updated to include favourites and recent contacts along the top.

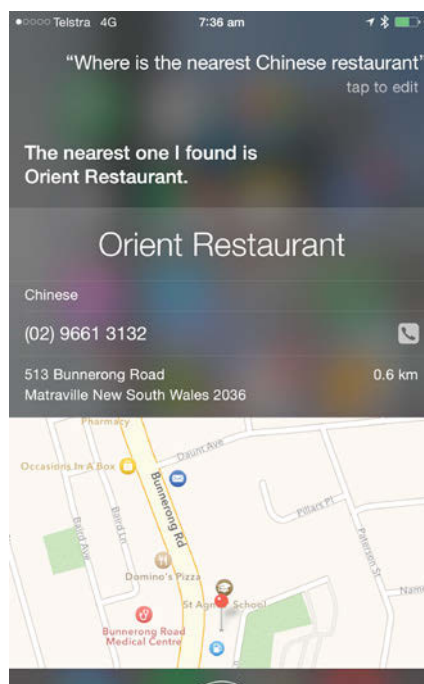
02 SIRI IS YOUR SAVIOR

Siri is an incredibly rich iOS feature that lets you perform a wide range of functions using your voice. Press and hold on the Home button to ask about everything from navigating to the nearest pizza place to checking the time in Singapore to finding out what song is currently playing or sending a text message to your significant other.

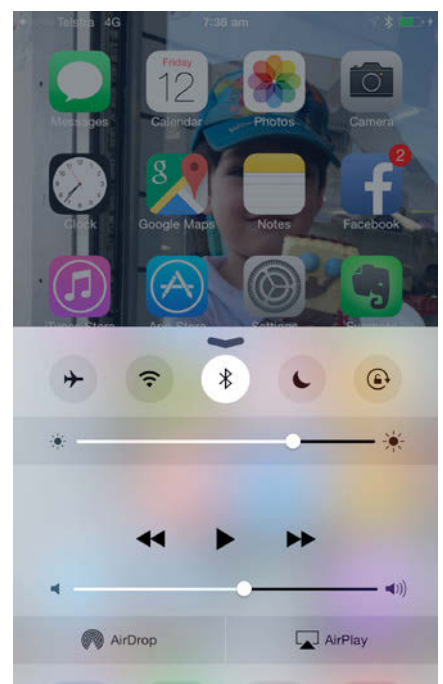
Since Siri understands natural language, you can talk to Siri as you would a human. It works exceptionally well as a personal assistant: you can ask it to read out your daily schedule,



A quick double-press of the home button reveals both running apps and frequently-used contacts.



The voice-controlled Siri feature is smarter than most personal assistants, and can pull up a staggering variety of information.



A quick swipe up from the bottom of the screen gives you easy access to regularly used system settings and apps.

03

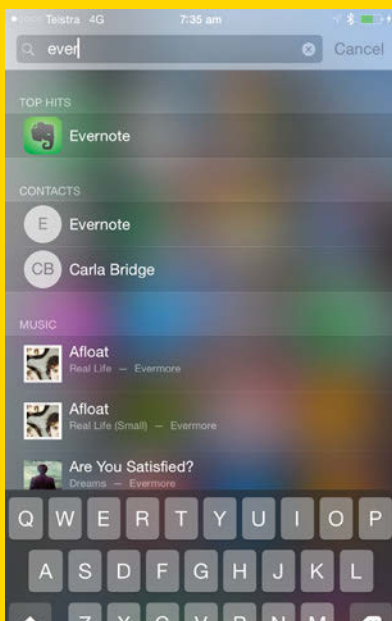
SEARCH SMARTER

Spotlight Search is an all-purpose device-wide search that helps you quickly find and open notes, events, messages, reminders, contacts, web sites, apps and music tracks. It's powerful because you don't have to open the relevant app first and then find the content — you find the content first via Spotlight Search (which can be accessed from any homescreen by swiping down) and then it launches the relevant app.

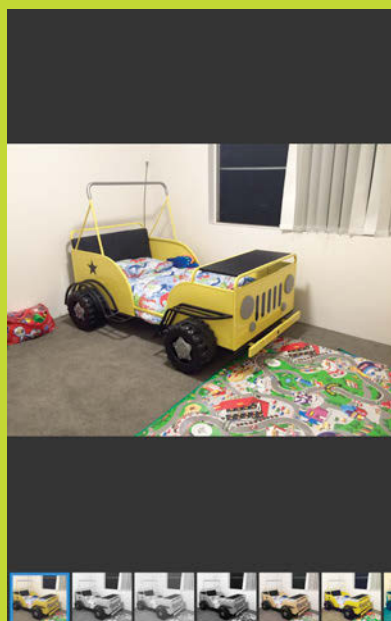
Spotlight isn't so good at searching across Mail and Messages, although both are meant to be included. However, both of these apps have their own internal search functions that you can access by swiping down from the main messages screen.

+

"SWIPE UP FROM THE BOTTOM OF THE SCREEN FROM ANY APP TO DISPLAY THE CONTROL CENTER."



Think of Spotlight as your iPhone or iPad's built-in Google search, finding anything you need as quickly as you can type it.



Simple editing tools and filters in the Photos app will make your iPhone or iPad photos look even better.

07

FIX UP YOUR PHOTOS

As good as the cameras are on the iPhone and iPad, the photos they produce will almost always benefit from a spit shine. Thankfully, you don't need to know anything about image editing to this. To edit a photo, open it in the Photos app and tap 'Edit'. The magic wand icon in the top right corner will automatically tweak the relevant settings to give your photo a boost, while the filters (accessed by tapping on the icon with three concentric circles) give your photo a distinctive new look. Tap Done when you're finished to save a new copy of the photo.

organise a meeting with a specific client, remind you to complete certain tasks or do research over Google, Wikipedia and Wolfram Alpha.

05 COMMAND AND CONTROL

There are certain system settings that you're likely to use on a regular basis: volume, Wi-Fi, and Bluetooth — as well as screen brightness if you're judicious about your battery life. The good news is that you don't have to dig through the Settings every time you want to access those functions.

Swipe up from the bottom of the screen from any app to display the Control Center, which also includes access to playback controls, airplane mode, do not disturb mode and screen rotation lock. It also has shortcuts to a handful of utilities that you're likely to need in a pinch, including a flashlight, calculator and camera.

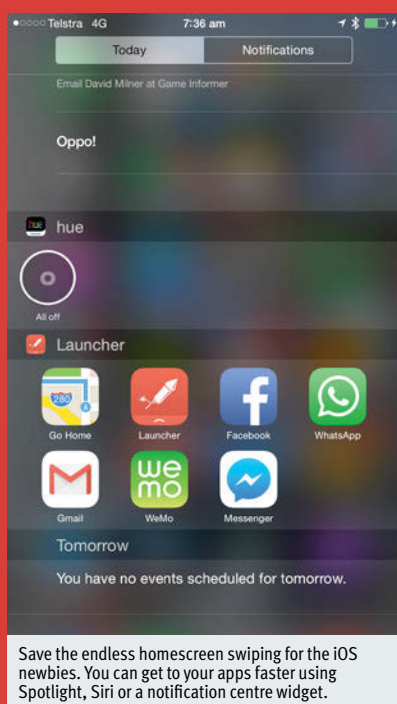
06 SHARING IS CARING

If you have a family of iPhone and iPad users, you can take advantage of the new Family Sharing feature introduced with iOS 8. This lets

you share multiple types of content across different Apple IDs, including apps, media, photos, calendar and locations. For paid items, the family sharing organiser's credit card is charged, and you can enable an 'ask to buy' feature for kids that sends you an instant permission request every time they want to make a purchase. To set Family Sharing up, go to 'Settings > iCloud > Family'.

08 RIGHT PLACE AT THE RIGHT TIME

The Reminders app is more than a



Save the endless homescreen swiping for the iOS newbies. You can get to your apps faster using Spotlight, Siri or a notification centre widget.

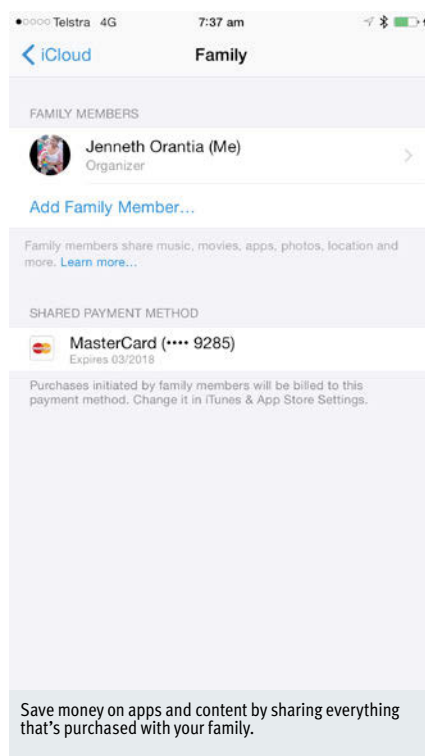
04

LAUNCH APPS FASTER

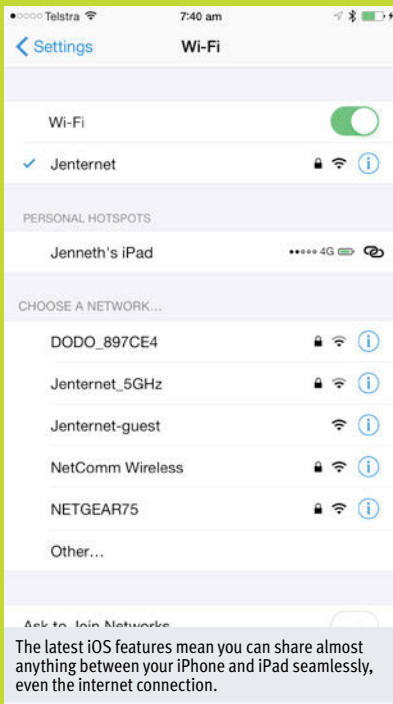
It's surprising how many iPhone and iPad users still scroll through multiple homescreen pages whenever they need to find an app. There are much faster ways to do this — the quickest is by swiping down from anywhere on the homescreen (except for the top, as this brings down the notification centre) to display the Spotlight Search bar. Start typing the name of the app you're looking for, and it will display matching content on your device.

The other quick way to launch an app is by using the Siri voice control system. Press and hold on the Home button until you see the Siri screen appear. Say 'launch' or 'open' and the name of the app.

The final way to launch favourite apps quickly is using the free Launcher widget. This lets you add shortcuts to a variety of apps (along with contacts and web sites) from iOS's notification centre, which is accessed by swiping down from the very top of the screen.



Save money on apps and content by sharing everything that's purchased with your family.



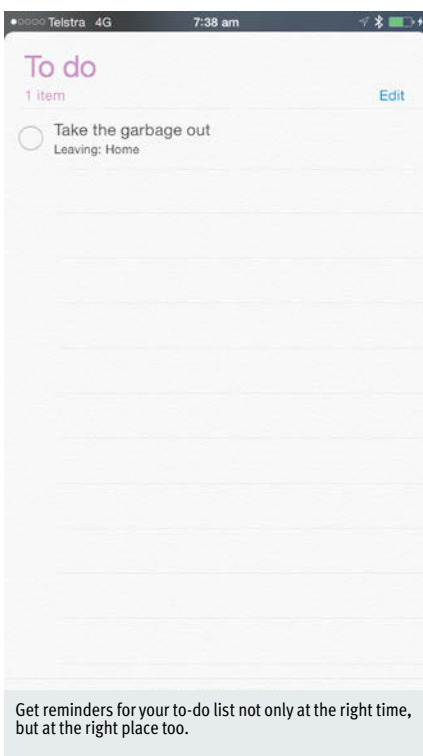
09

BETTER TOGETHER

It should come as no surprise that the iPhone and iPad make for excellent bedfellows. Whether it's sharing an internet connection without having to set up a Personal Hotspot manually (go to 'Settings > Wi-Fi' on your iPad and you'll see the name of your iPhone under Personal Hotspots), getting the same apps to install on both devices (go to 'Settings > iTunes & App Store' and turn on Apps under 'Automatic Downloads') or browsing the web from one device and being able to continue the session in another (from Safari, press the right-most tabs icon and scroll to the bottom of the list to view open tabs on other Apple devices), the level of integration between the two is really second to none.

You can even take calls and reply to text messages that come in on your iPhone from your iPad. The former only works if both devices are on the same Wi-Fi network (a feature that kicks in automatically), while the latter works regardless of the network you're on.

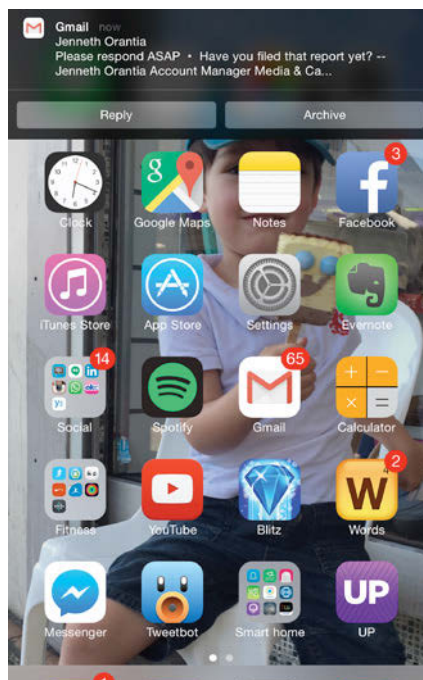
simple to-do list. Not only can you set it up to remind you to do something on a certain time and day, but you can also set it to remind when you're at a certain location. This is a handy way to remember to buy milk when you're at the grocery store, or take out the garbage bins when you're leaving for work in the morning, and it's done by pressing the information button when you're adding the task in Reminders. You can also get Siri to do this all for you by saying something like "Remind me to take out the garbage bins tomorrow morning before I leave the house".



10

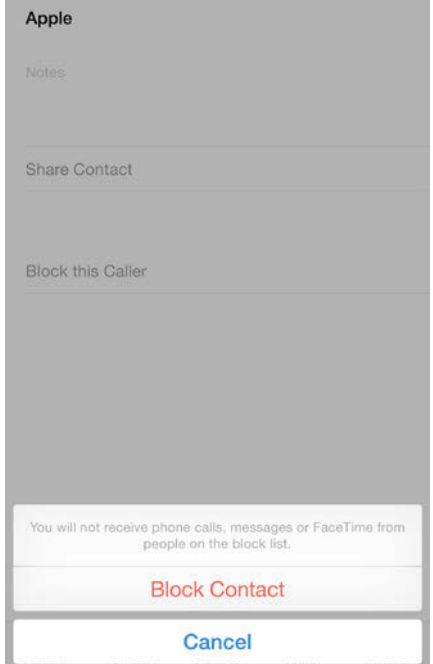
INTERACTIVE NOTIFICATIONS

One of the new features in iOS 8, actionable notifications, enables you to interact with incoming alerts without having to leave what you're currently doing. This works for things like messages, meeting invitations and Facebook comments; when they appear on top of the screen, you can pull the notification banner down to reveal actions you can perform immediately, such as sending a message back or declining/accepting the meeting.



Now you can interact with notifications rather than simply tap on them to launch the relevant app.

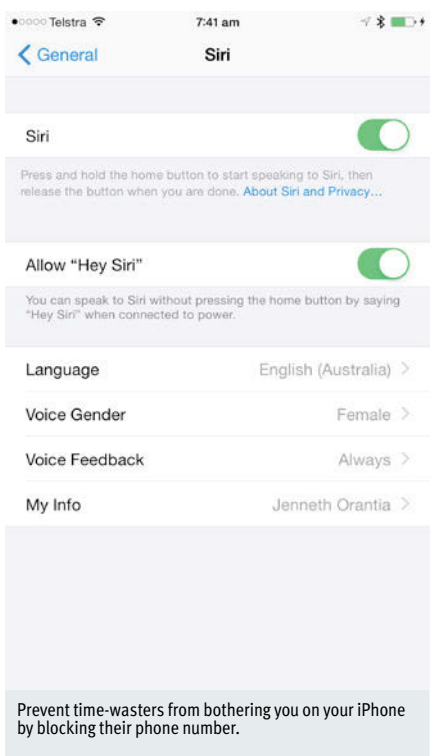
Prevent time-wasters from bothering you on your iPhone by blocking their phone number.



11

BLOCK THE BOTHERSOME CONTACTS

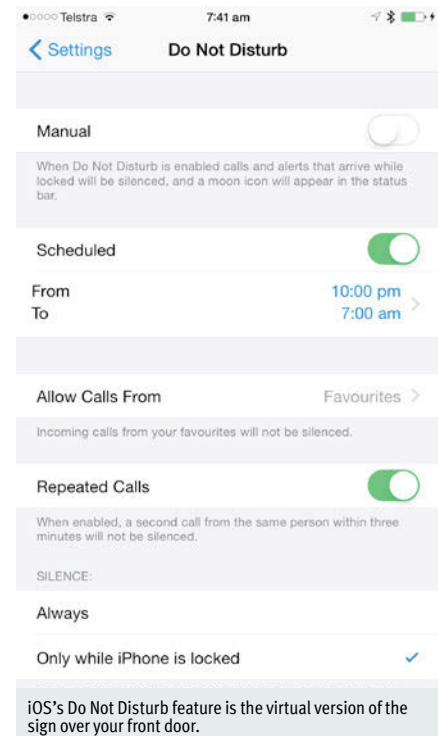
Control who can reach you on your iPhone by using the handy blocking feature. This prevents phone calls and text messages from certain phone numbers appearing on your iPhone. Do this from the call log by going to 'Phone > Recents', tapping on the 'i' icon, and selecting 'Block this caller'. You can also do it from the Messages app by opening a message from that person, tapping Details, tapping the 'i' button and selecting 'Block this caller'.



WATCH YOUR BATTERY LIFE

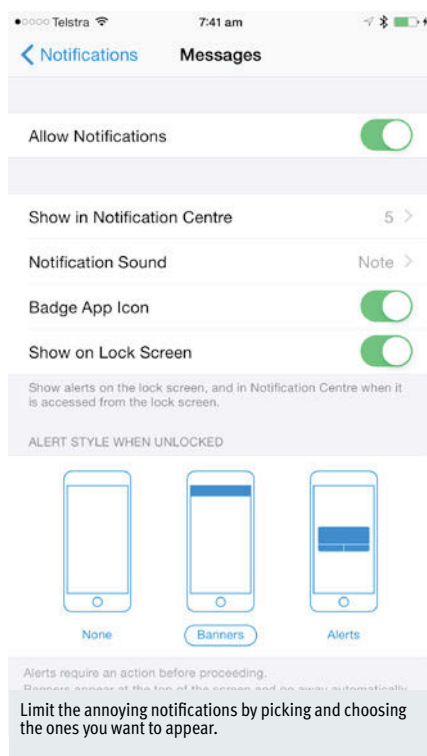
With normal use, your iPhone's battery should comfortably last you the day. Tricks to extend its daily run time include dialing the screen brightness down (accessed from the Control Centre – see tip 5), turning off non-essential notifications on the lockscreen (see tip 14), switching off 4G when you don't need it ('Settings > Mobile > Voice & Data'), and minimising the number of apps that can refresh data in the background ('Settings > General > Background App Refresh').

If you're still getting poor battery life, there could be two culprits. You might have a dodgy app that's consuming battery while your device is asleep, which you can check by going to 'Settings > General > Usage > Battery Usage'. Only apps that you use on a regular basis should be up near the top. The other possibility is that your iPhone or iPad needs to get its battery replaced, which is likely if it's more than a couple of years old.



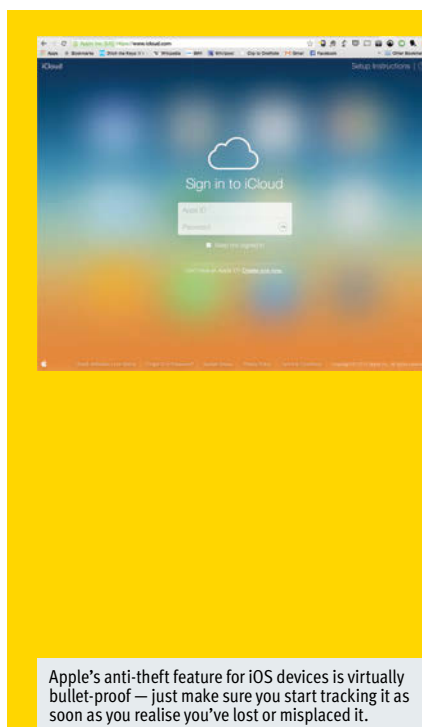
13 ACCESS SIRI HANDS-FREE

If your iPhone is plugged into a power source, you can launch Siri without pressing and holding the Home button once you enable hotword detection. Go to 'Settings > General > Siri' and turn the 'Allow 'Hey Siri'' feature on. This is handy for when you're in the car and need to keep your eyes on the road and hands on the wheel for things like music playback and navigation. It's also nifty to be able to fire off questions to Siri while your iPhone or iPad is charging on your desk and you're sitting at a computer.



14 FINE-TUNE YOUR NOTIFICATIONS

The more apps you have installed, the more notifications you're bound to get on a regular basis — which can quickly drive you crazy, not to mention use up battery life every time a new notification pops up on your lockscreen. You can take control of the apps that are able to send you notifications, as well as specify the form the notifications take, from the 'Settings > Notifications' page. You can pick between banner and pop-up alerts, and specify whether the notification appears in the notification centre and lock screen.



15 DO NOT DISTURB

If you have friends, family, or business contacts in different time zones, or have trashy friends that call you at all hours over the weekend, you'll love the 'Do Not Disturb' feature found in 'Settings > Do Not Disturb'. This lets you manually switch on or schedule in a 'quiet period' (typically when you're expecting to be asleep) where all of the calls and alerts on your device are blessedly silenced. For emergencies, you can specify that certain calls are allowed through. ■

ACTION PLAN FOR LOST DEVICES

So long as you set up an iCloud account when you first started using your iPhone or iPad, you'll have 'Find my iPhone/iPad' setup by default, which makes it next to impossible for thieves to restore your phone to factory settings and sell it on. With Find my iPhone/iPad active, you'll be able to enforce a passcode lock on the phone the next time it connects to the internet (assuming you didn't have security enabled on it to begin with), track its location on a map, remotely wipe all the data off it, and set a phone number that whomever's found your device can call while the device is locked. This is all done by using the Find My iPhone app on another iOS device or logging onto www.icloud.com and signing in with your Apple ID. From here, you can also access your personal data such as contacts, photos, email and notes.

[IPHONE ADVANCED]

Take your iPhone from incredible to invincible

POWER USERS LOOKING FOR A MOBILE PLATFORM THAT OFFERS CUTTING-EDGE FEATURES REALLY SHOULDN'T DISCOUNT IOS.

[JENNETH ORANTIA]

APPLE MAY HAVE mastered the art of simplicity with its iOS operating system, but you'd be amazed at how many advanced features and functions lurk just below the surface.

While it started off as a straightforward smartphone platform tailor-made for non-techies and everyday users, iOS has since evolved into a complex system that can capably go toe-to-toe with Android. In fact, it has leapfrogged its main rival in many respects, with some of the more advanced features like AirDrop, self-destructing messages and credit card scanning not having an equivalent feature in Android.

01 SUPER-CHARGE THE NOTIFICATION CENTRE

Apple has opened up iOS' notification centre (accessed by swiping down from the very top of the screen) to third party developers, allowing

for a rich selection of widgets you can install for easier access to your apps and information. You may have widgets ready to go on your iOS device already that are linked to the apps you have installed. Swipe down to display the notification centre, then scroll down to the Edit button. From here, you can enable or disable existing widgets. Other worthwhile widgets you can install from the App Store are Vidgets, Launcher and Battery Graph Widget.

02 SHARE FILES TO DIFFERENT APPS

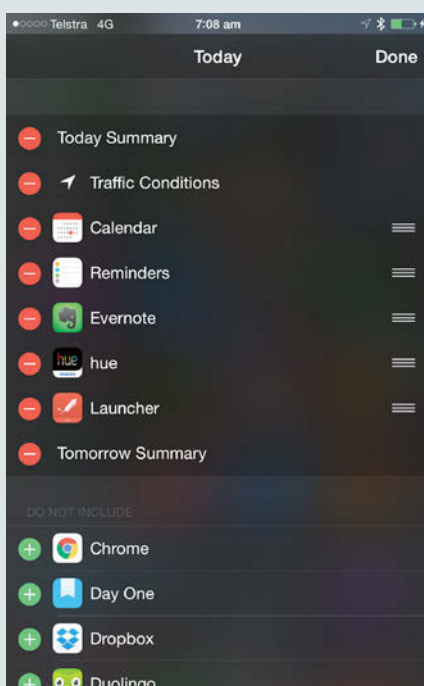
You can now send files that are open in one app, such as a note or photo, to many other apps, similar to the feature that Android has offered for years. To do this from the Photos app, open the photo in question, tap on the share icon in the bottom left corner, then select the app you want to share it with. Don't see it in the list? Swipe the horizontal list over to the left to reveal more apps, and press the More button

to see a list of other supported apps, which you can turn on if they're not already active.

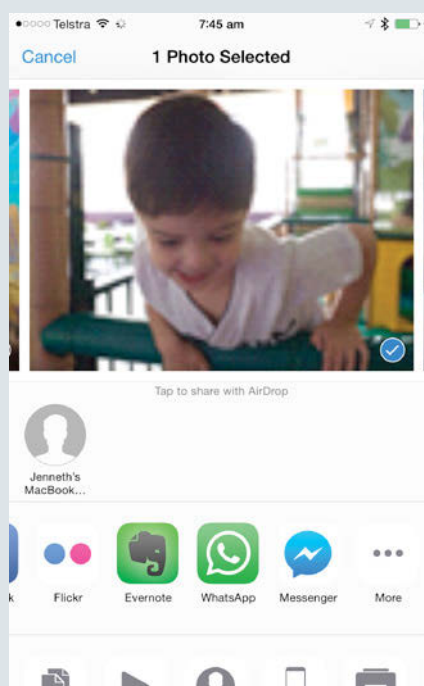
03 ADVANCED BROWSING TRICKS

Keep your private information close to your chest using the private browsing and web search features built into Safari. Private browsing means Safari won't keep a record of the pages you visit in your search history and blocks some web sites from tracking your behaviour.

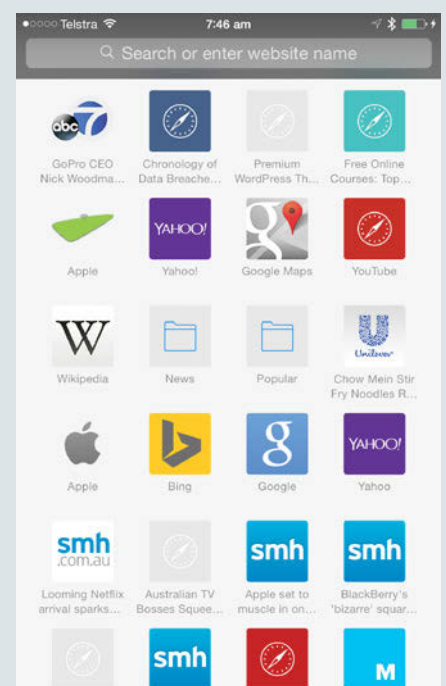
To open a private browsing tab, tap on the right-most tab icon at the bottom and select Private and tap '+'. Private browsing tabs are distinguished by a dark grey toolbar. You can also ditch the creepy tracking habits of Google by switching your search engine of choice to Duck Duck Go, accomplished by going to 'Settings > Safari > Search Engine'. For bonus points, enter credit card details without manually inputting all of the numbers by tapping on the credit card field, selecting the 'AutoFill Credit Card option' and tapping on 'Use Camera'.



The notification centre gives you easy access to the information that matters most from both built-in apps and third party apps.



Content like photos, documents and PDFs can be opened in one app and then sent to another app using the handy Share function.



A dark grey Safari tab means you're currently in a private browsing session, which means all of your activity is on the down low.

04 SNOOP ON LOVED ONES

Not that we advocate snooping through your better half's iPhone or iPad, but if you were concerned about their, er, activities, there are a couple of ways to check up on them on the down-low. Forget the typical messages and phone call log, which they're sure to judiciously delete if they're doing anything dodgy: head to 'Settings > Privacy > Location Services > System Services (found by scrolling to the bottom of the screen) > Frequent Locations', and you'll see the top five places he or she goes to most regularly. The latest version of iOS also keeps a copy of any deleted photos for 30 days, so you can see everything they've deleted in that time by going to 'Photos > Albums > Recently Deleted.'

05 SEND SNAPCHAT-STYLE SELF-DESTRUCTING VIDEOS

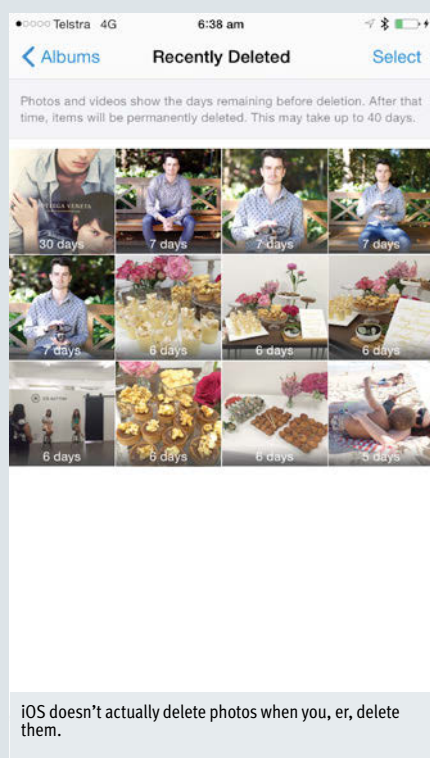
Apple has taken Snapchat head-on by introducing a self-destruct option for audio and video messages. To send a self-destructing video message that auto-expires two minutes after the recipient has viewed it, create a new message to the recipient, then press and hold on the camera button until you see the pop-up with a record button and camera. By default, it will do a selfie video, but if you want to use the rear camera, tap on the camera switch icon in the top right. Press the red button to start recording, press it again when the video is

complete, then click the upward arrow to send. Note: recipients can still choose to keep the video if they want by tapping on the tiny 'Keep' option, and they'll also need to be using an iOS device.

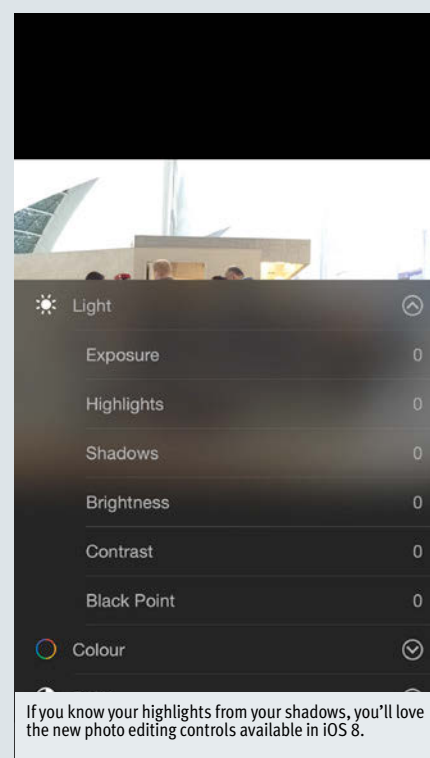
06 ADVANCED PHOTOGRAPHY CONTROLS

Don't be fooled by the Camera app's benign interface: there are a plenty of powerful settings you can access if you know where to look. You can now manually adjust the photo's exposure

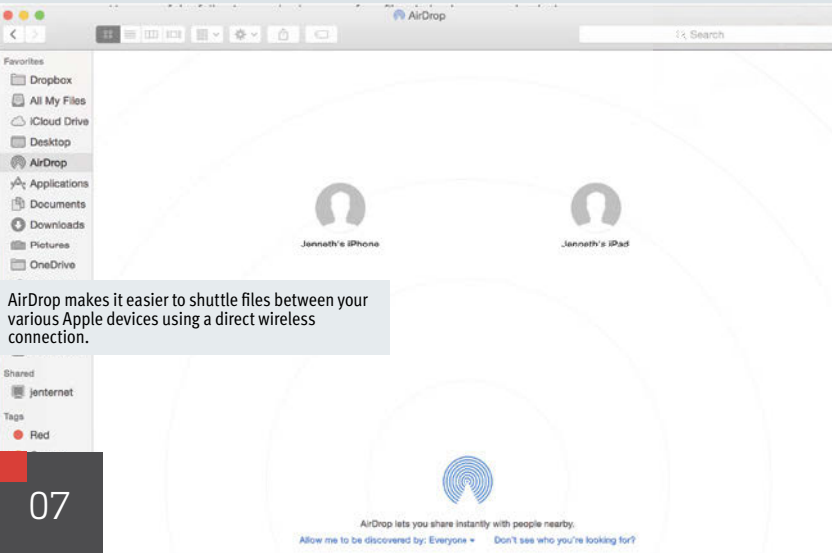
after you tap to focus an image; you'll see a sun icon next to the auto-focus box – swipe up and down anywhere on the screen to increase or decrease the exposure level, making the image brighter or darker. There are also manual adjustments you can make to the photo after you've shot it. Tap on the photo thumbnail in the bottom left corner, click Edit, then tap on the third icon on the bottom to bring up settings to adjust things like from highlights, shadows, contrast, saturation and black point. ■



It's not as good as Snapchat, but at least the self-destructing videos are integrated into the Messages app, for easy sending or viewing.



If you know your highlights from your shadows, you'll love the new photo editing controls available in iOS 8.



AIRDROP FILES

Tired of having to email files back and forth to receive them on your different devices? AirDrop offers a better way — provided all of the devices in question have a shiny Apple logo on them and they're running at least OS 7 or OS X Yosemite.

On your iOS device, swipe up from the bottom of the screen to reveal Control Centre, tap the AirDrop button and select Everyone. On your Mac, open Finder, select the AirDrop option on the left panel, click on the 'Allow me to be discovered by' link at the bottom, and pick Everyone. You'll now be able to transfer files to your iOS devices from here by dragging them to the relevant icon (if your iPhone or iPad doesn't appear in the AirDrop window, make sure it's unlocked first). You can also do this procedure in reverse by using the sharing function within iOS apps such as Photos, Safari, Contacts and Pages.

[ANDROID EASY]

Upgrade your Android to amazing

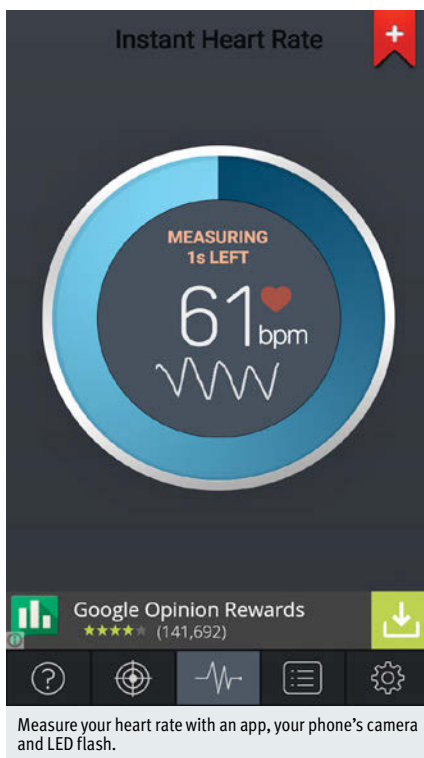
UNLEASH THE SUPERPHONE LURKING WITHIN YOUR ANDROID PHONE. HERE'S HOW TO EXTRACT NEW PERFORMANCE AND FEATURES WITH THE LATEST APPS, TIPS AND TWEAKS.

[DARREN YATES]

SMARTPHONES ARE PRETTY clever gadgets — but even we wouldn't say they're perfect. While bloatware is still a problem for many, these mobile computing devices have applications we're still discovering and haven't even dreamt of yet. Even so, as much as Android has improved in the last few outings, there are plenty of ways you can supercharge your smartphone just with the latest apps and tweaks, from measuring your heart rate via the camera to finding your phone via Google search. Check out these quick tips you can apply yourself and get your smartphone reaching its full potential.

01 MEASURE HEART RATE WITH YOUR PHONE

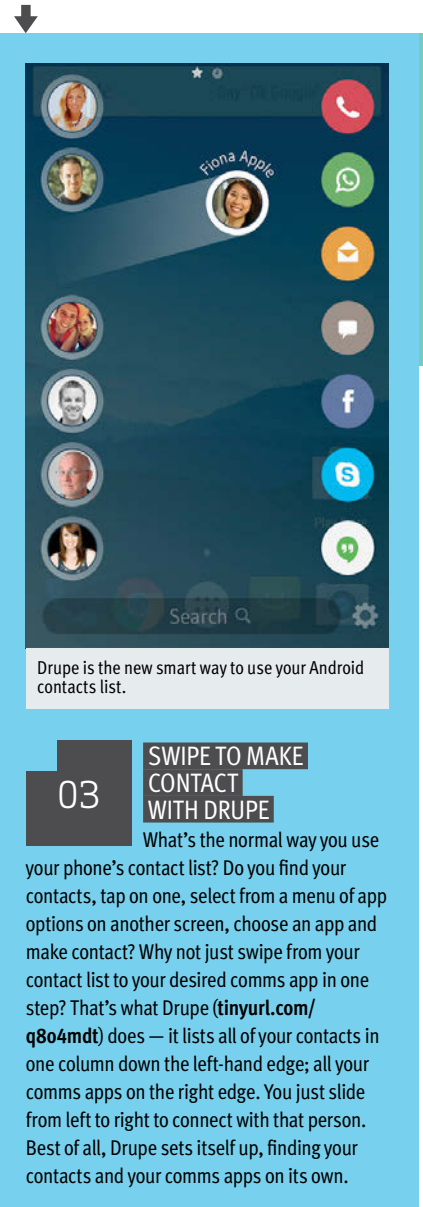
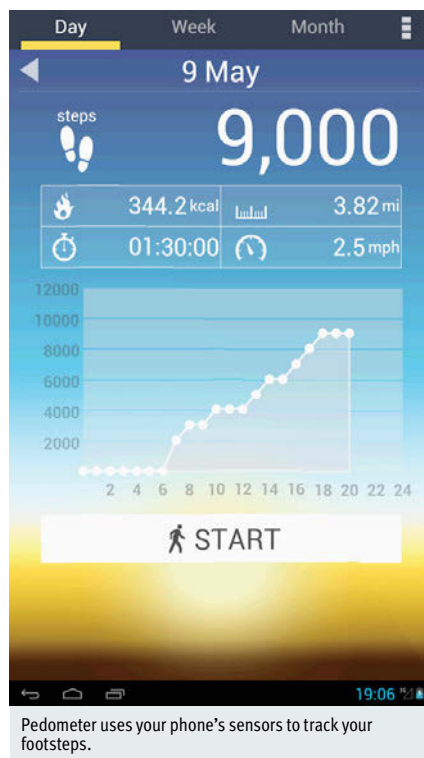
Heart-rate monitoring is the latest must-have feature in new-generation fitness trackers like the FitBit Charge HR, which also contributes to their new significantly higher prices. But you don't need a fitness tracker — you just need an app. Instant Heart Rate (tinyurl.com/7bn4e2t) uses your phone's camera and flash LED to do the same party trick as those fitness trackers.



Place your finger against the camera lens, activate the app and watch it go to work, showing you your heart rate in beats per minute. The app is free and will keep the last five readings on your phone — or you can delete them if you prefer.

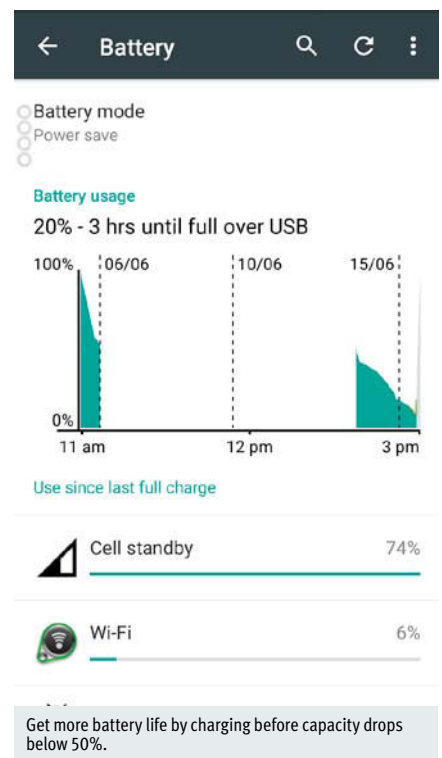
02 TRACK YOUR STEPS WITH YOUR PHONE

If you can already measure your heart rate with your phone, why not measure your footsteps too? Pedometer (tinyurl.com/q8s3wch) uses your phone's built-in electro-mechanical sensors to track your steps, just like a fitband. The new Google Fit app does similarly but is a more comprehensive alternative if you're building a healthier lifestyle. Pedometer works with any Gingerbread/Android 2.3 or newer phone. Both apps can help you track your calorie burning over a day, week or simply track your movements. If walking is too slow for you, try Strava (tinyurl.com/ozvf4u4) — it tracks your runs and calories; even browse popular routes.



03 SWIPE TO MAKE CONTACT WITH DRUPE

What's the normal way you use your phone's contact list? Do you find your contacts, tap on one, select from a menu of app options on another screen, choose an app and make contact? Why not just swipe from your contact list to your desired comms app in one step? That's what Drupe (tinyurl.com/q8o4mdt) does — it lists all of your contacts in one column down the left-hand edge; all your comms apps on the right edge. You just slide from left to right to connect with that person. Best of all, Drupe sets itself up, finding your contacts and your comms apps on its own.



Get full control of your Lollipop phone's camera with Manual Camera.



08

GOT LOLLIPOP? GET MANUAL CAMERA

The best new feature of Lollipop if you're a photographer is the introduction of new software to allow you ultimate control over your phone camera. Everything from shutter speed to white balance and colour temperature can now be manually controlled. Problem is, you need a native-Lollipop phone to take advantage of the new features. But if that's you, try Manual Camera (tinyurl.com/pf6592o) — it's as close to a DSLR as you can get for now. The free Manual Camera Compatibility app will test if your phone can be used. If your Android OS version starts with a '4', the new Google Camera 2.5 and Camera 360 are good bets.

04

SUPERCHARGE YOUR PHONE — LITERALLY!

Avoid allowing your phone's battery to discharge completely — the phone's lithium-ion battery will give you more hours of runtime overall if you recharge it when it falls to 50% capacity rather than allowing it to discharge completely before plugging it back in. Have a 5-inch or larger phone and forgot the AC charger? Recharge it through a USB3.0 port — it should recharge quicker than using a USB2.0 port. If you have one of the latest Broadwell-class NUC mini PCs, make sure to use the yellow port to charge your phone — it's a designated 'charging port' and should charge your phone faster.

05

GET MORE WI-FI SIGNAL FREE

Getting a decent Wi-Fi signal might seem like a black art, but WiFi Analyzer (tinyurl.com/8yqxge9) turns that black art back into a science. It measures the signal strength coming from your Wi-Fi access point (WAP) over time — all you do is move your phone around until you get the highest reading and that's your best position. It'll also show you if you're using a crowded Wi-Fi channel, in which

case, move your Wi-Fi network to a new channel to avoid the interference. Wi-Fi needs a good clear signal — this app will help you get one. Simple and easy to use.

06

STREAM YOUR WORLD LIVE TO THE WEB

The thing that makes Twitter popular is its immediacy — you don't need to wrap up your 140 characters in pretty fonts or images. Just say what you want. It's taken a couple of months, but now that Twitter has released its new live Meerkat-alternative video streaming app, Periscope (tinyurl.com/nzfu63v), on Android, you can now show what you want too. At time of writing, the app was barely a week old, but Periscope allows you to stream live video from your phone to all of your Twitter followers, or just a few — you choose. But as soon as you broadcast, those followers get auto-notified via tweet linked to your video. Clever idea.

07

GET UNLIMITED CLOUD STORAGE WITH GOOGLE PHOTOS

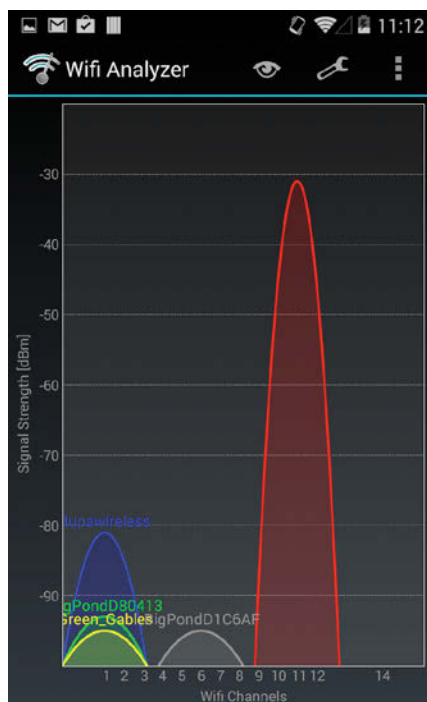
Google announced a new update to its Photos app (tinyurl.com/qbrgyol) at the latest Google I/O conference this year with unlimited free

cloud storage for images up to 16MP and videos up to 1080p (Full HD) resolution among its new features. Just be warned though — high-res images and video use lots of storage and while the unlimited free cloud storage is a drawcard, make sure you leave the 'Use cellular data to back up' set to off and keep an eye on background-sync data usage, particularly if you take lots of photos. Unfortunately, it seems to lack Chromecast support at time of writing.

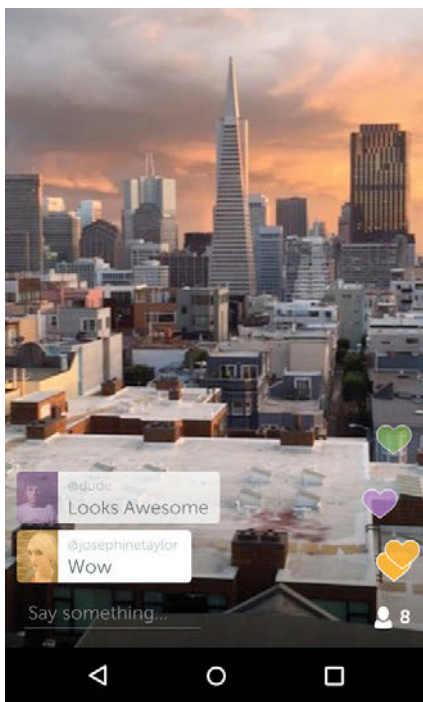
09

GOT OLED? KEEP IT BLACK

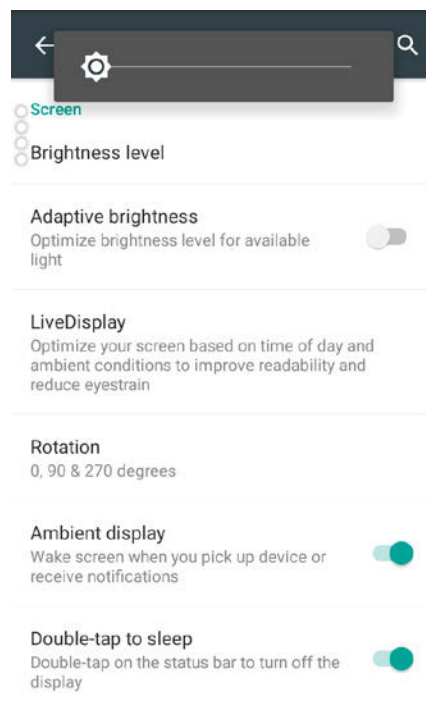
Most phones with OLED (Organic Light-Emitting Diode) screens look spectacular, especially when watching videos — no LCD (liquid-crystal display) panel will give you those deep blacks. In fact, you should be keeping your OLED screen as black as you can. Each OLED pixel is a light generator and since an OLED needs no electrical power to produce black (unlike LCD), the more of the screen you can keep black, the less power you'll use — and that'll improve overall battery life. Reports suggest by doing this, you could boost battery life by as much as an hour a day.



Analyzer can find the best Wi-Fi signal for your phone.

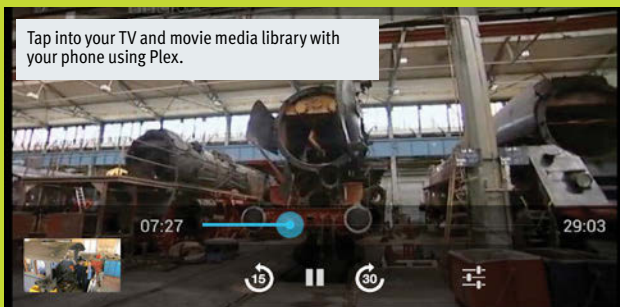


Stream live video to your Twitter followers using new Periscope for Android.



OLED panels get better battery life with darker screens.

Tap into your TV and movie media library with your phone using Plex.



14

GOT YOUR MEDIA LIBRARY? GET PLEX

If you're not using your smartphone as the ultimate remote control to your media library, you should be asking yourself why. If you don't have a media library, that's even more of a problem! No matter where you get your home media library from, your phone can be a brilliant Wi-Fi remote. If you're looking for the right apps, give Plex (tinyurl.com/bmro3lh) a run. It has an excellent PC media server (free), while the Plex for Android app will cost you about \$5. Plex works not only with Windows, Mac OS X and Linux PCs, there's even an app for Chromecast.

10

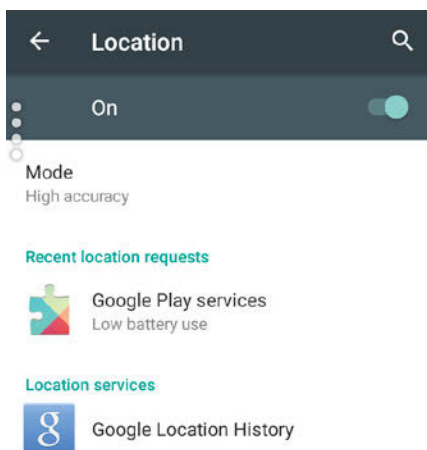
CUT BROWSER DATA BY UP TO 40%

Why is it that no data plan seems big enough? No matter what we have, we still seem to wonder where it all goes. What doesn't help are apps quietly syncing in the background, helping themselves to your bandwidth. Ensuring all new apps are set to manual-sync only will help. You can even save data while browsing with Google Chrome (tinyurl.com/7qoewqh) — launch the browser, select Settings and turn on Data Saver. It sends your browser data through Google servers first to compress it and immediately, you'll start saving between 30-40% in browser data. If you're not using Chrome, here's a good reason to.

11

GOOGLE, FIND MY PHONE!

Before you lose your phone, grab the latest Google app from the Play store, install it, select 'Google Settings > Location', switch it to On and set Mode to 'High Accuracy'. Now when your phone goes missing, launch Chrome browser on your PC, search 'Android find my phone', select your phone from the list and within a minute or so, it should find it — it just needs the phone switched on and connected to



Turn on Locations and use Google to find your own phone.

at least a Wi-Fi network. At that point, it's accurate to about 20 metres. You can even ring the phone. We tested it with Gingerbread/2.3 and Lollipop/5.1.1 phones — both were found.

12

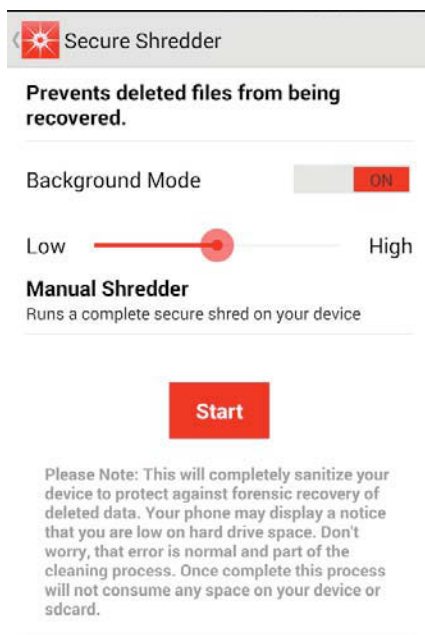
BYPASS DATA RETENTION — USE WICKR

Well, if it's good enough for Federal Minister for Communications, Malcolm Turnbull, it's good enough for us! If you'd prefer your communications took a little longer to hack than scratching a \$2 lottery ticket, get onto Wickr (tinyurl.com/or6qtht). When Prime Minister Tony Abbott suffered his 'near-death experience' in early 2015, rumour has it ministers were communicating via Wickr. The messaging app encrypts all data using 256-bit AES encryption and according to Wickr, transmits no metadata. Not even Wickr knows who you are. Best of all, you can set your messages to self-destruct, leaving no trace, thanks to its own built-in Shredder feature.

13

NEW MUSIC PLAYER? EQUALIZER+ OR POWERAMP

Streaming free music from Spotify is cool, but



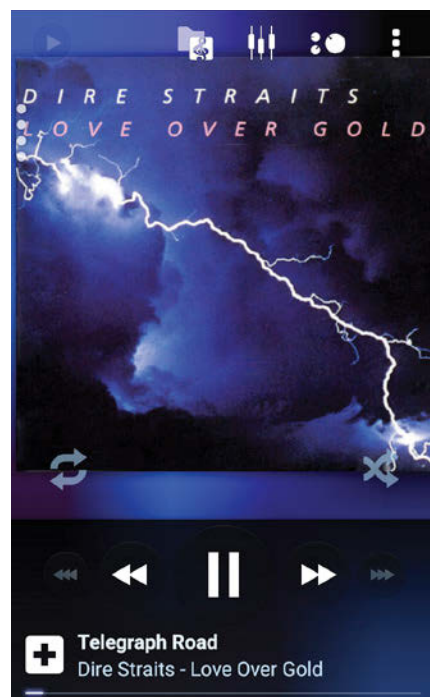
Join our politicians and send private messages using Wickr.

when you want what you want, you've got to play your own. Two of our favourite music players are Equalizer+ (tinyurl.com/nz7kl4y) and Poweramp (tinyurl.com/9sahzjx). Equalizer+ comes free whereas Poweramp is a two-week trial and \$5 cost. But both apps are well worth your time, if for no other reason than their graphic equalizer back-end. Poweramp's 10-band is better and its default black skin is ideal for saving battery life on OLED phones. Of course, using EQ forces your phone to lean more heavily on the battery, but personally, I can't live without EQ.

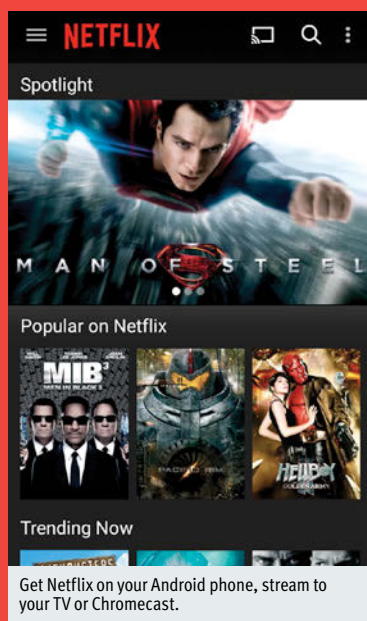
15

THE BEST VIDEO PLAYER? VLC OR MX PLAYER

If you're after the two best video players for Android, just download VLC (tinyurl.com/osltf45) and MX Player (tinyurl.com/6mqelvz). We've been singing the praises of MX Player for years and its ability to play all manner of media files is legendary (especially with the extra ARMv7 codec pack). But VLC really is the 'Swiss army knife' of media players and one of the few that will play audio files encoded with the Lollipop-added Opus audio codec (none of



Poweramp comes with a 10-band graphics EQ to tweak your music.



16

VIDEO ON DEMAND – FROM EVERYWHERE

You'd have to have been living under a rock for the last year not

to have heard that video-on-demand services have landed in Australia — and you can have them on your Android phone. Stan, Presto and Netflix all have Android apps that work with their respective \$10-a-month subscription services. Sign up to location rerouting services like unblock-us.com or getflix.com.au and you can tap into VOD services around the world such as BBC, Netflix US or Hulu. Better still, Stan, Presto and Netflix also work with Google's Chromecast dongle, allowing you to use your phone as a smart remote to your TV.

MX Player, Equalizer+ or Poweramp support it). But it's also a pretty decent music player and will stream media over a network (think home movie library).

17

GET A GOOD FILE MANAGER

If smartphones are computers and computers generate files, why doesn't Android come with an awesome file manager? That's a question for Google, but in the meantime, we can just download ES File Explorer (tinyurl.com/cd4u27q). This is our go-to file manager — it's rich with features, including tapping into your Windows PC and allowing you to grab files. It also lets you stream media files direct to your phone for playback. Root Browser (tinyurl.com/aytbttu) is another favourite that gives you greater access to Android folders you should only play with if you know what you're doing. Either way, these are both excellent options.

18

GET OFFICE LENS

We never thought we'd see the day Microsoft threw its cash-cow product at Android devices for free, but it's here. Microsoft Office Mobile with Word, Excel and PowerPoint has hit Google Play. There's also OneNote and 15GB of free storage from OneDrive. Personally, we love Office Lens (tinyurl.com/nvc37tl), the camera app that captures notices, white or blackboards and turns them into documents — Word, PDF, PowerPoint, your choice. What's cool about Office Lens is that you don't need to be 'front-on' to your subject — the app straightens everything out for you. Office Mobile isn't the full desktop experience, but definitely worth trying out.

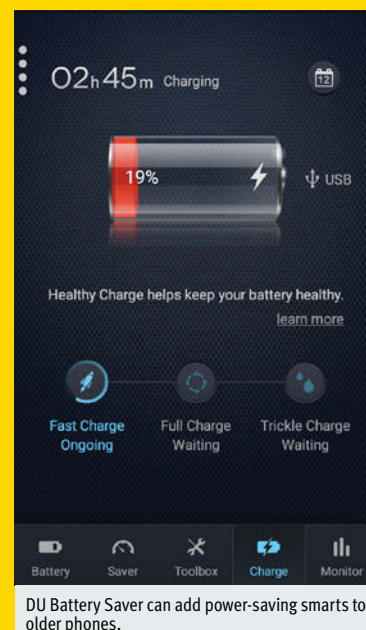


Microsoft's Office Lens makes capturing slides easy, even off-angle.

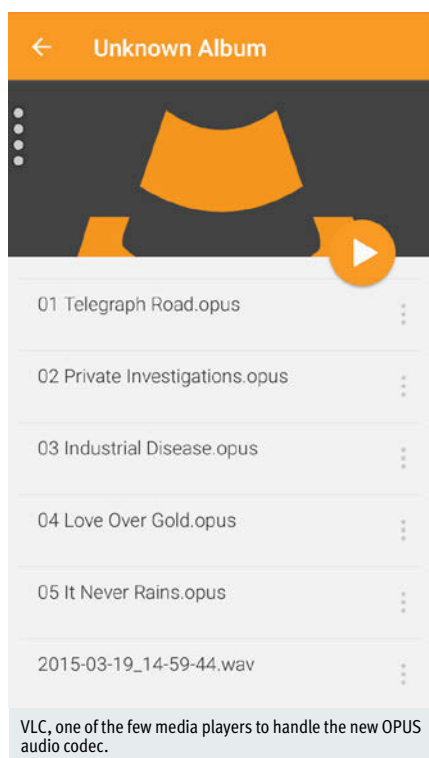
19

GET SMARTER BATTERY LIFE

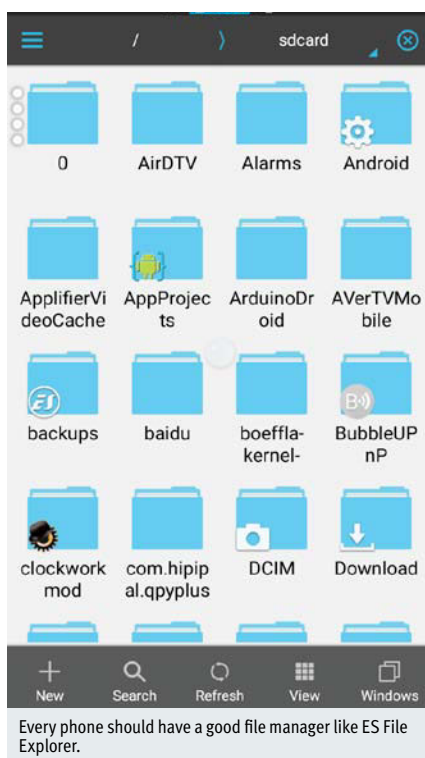
While apps auto-syncing can be a problem for your network data plan, they don't do much for your phone's battery life either. But your phone is smart enough to monitor its own power use — at least with the right app. DU Battery Saver (tinyurl.com/ovso67w) is one of many apps that can monitor app runtime, but if you have Lollipop, the basics come built-in — just go to 'Settings > Battery', tap Battery Mode and choose 'Power saver' and Android will now start guarding your phone's battery life more aggressively. You will always be your phone's best power manager, but both of these options will certainly help. ■



DU Battery Saver can add power-saving smarts to older phones.



VLC, one of the few media players to handle the new OPUS audio codec.



Every phone should have a good file manager like ES File Explorer.

[ANDROID ADVANCED]

Android: from amazing to astounding

A BEVVY OF ADVANCED TIPS TO TURN YOUR ANDROID DEVICE INTO AN EVEN MORE POWERFUL UNIT.

[DARREN YATES]

WE'RE ALWAYS SAYING you should think of your smartphone as a mobile computer — it'll change how you see it and help you extract every last ounce of goodness from it. From writing your own functions, gaining root access and learning about the Xposed Framework, the Android community continues to discover new ways of using these incredible devices.

WARNING: Many of these advanced tips rely on gaining root access to your phone, a process that requires you backup all data beforehand in the rare event that your phone is damaged or wiped during said process. Don't say we didn't warn you.

01 MAKE MORE OF YOUR TECH — USE IFTTT

Increasingly, many of us use more mobile tech in a day than just a smartphone. If you're rocking a fitness tracker and you haven't integrated it with your phone yet, you're not maximising their potential. That's what If-This-Then-That (IFTTT) can help with (just called 'IF' on Google Play, tinyurl.com/nbb4wyw) — it uses the internet to give a 'whole is greater than the sum of the parts' experience through 'triggers' and 'actions'. For example, use your fitness tracker as a wireless

trigger to action an email or message to your phone that it's time to get walking if you haven't reached your daily step goal by a certain hour. Best thing, IF is free.

02 GET ROOT-ACCESS TO YOUR PHONE

Rooting your phone sounds a bit anti-social, but it just means gaining root-access or ultimate control of your phone. It's not without risk and you should always back up your phone's entire contents (My Backup, tinyurl.com/nsfwjy8, is good for this) before you attempt it, as the process could, in rare circumstances, brick your phone, wipe its contents or something else equally ghastly. But gaining root-access allows you to do cool things like run the Xposed Framework or apps like SambaDroid. Unfortunately, the newer the phone, the more difficult root-access will be. Samsung owners, learn about CF-Auto-Root and Samsung's ODIN utility — not the simplest combination but hasn't failed us yet.

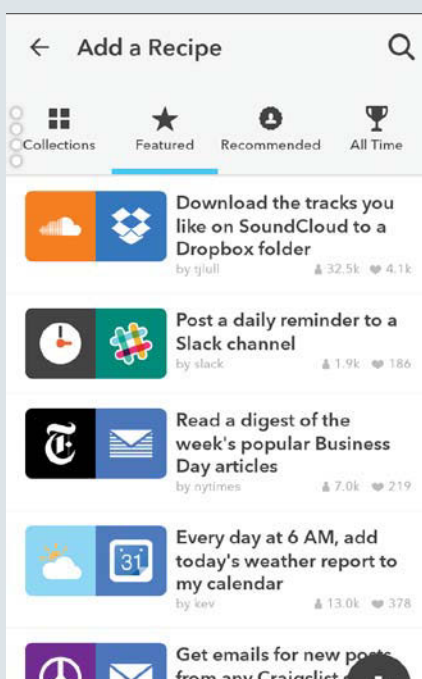
03 READY FOR MORE THAN IFTTT? GET TASKER

If you've got the hang of IFTTT, you'll love the power of Tasker (tinyurl.com/6pk89pd). Tasker

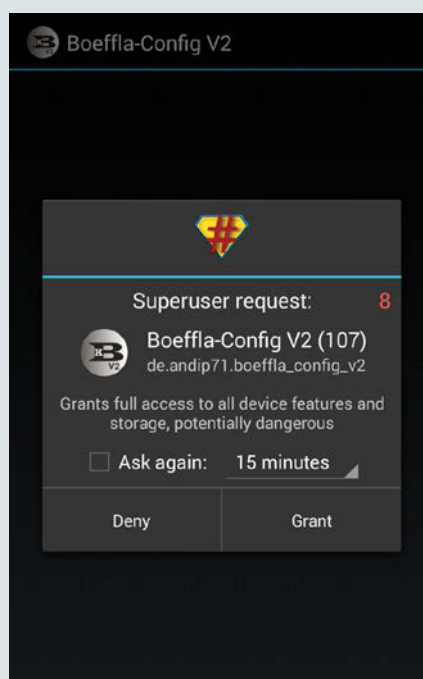
is an automation tool, but combined with the Tasker App Factory, it really is about the closest thing you can get to making your own Android apps without learning to program. Tasker allows you to automate many of your phone's functions based on almost any number of triggers, for example, launching a music app when you plug in your headphones, or alerting you when your phone is charged. But the Tasker App Factory can turn your tasks or projects into Android .apk apps you can share with friends or upload to Google Play.

04 SAMBADROID YOUR PHONE INTO A NAS

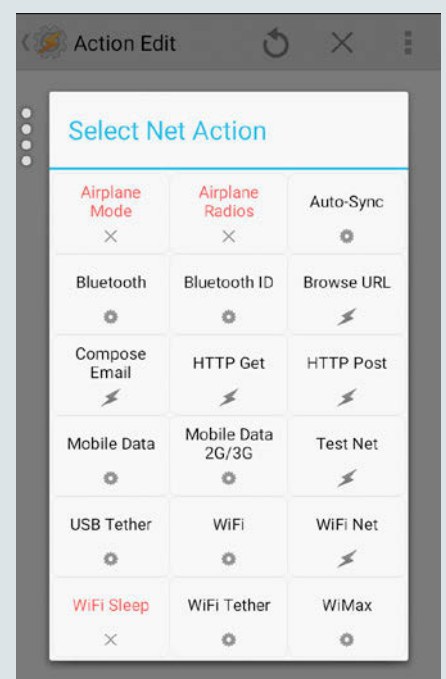
We know collaboration is the business buzzword of the moment, but there are times you need more than just tacking notes onto a document. SambaDroid (tinyurl.com/na9mkxa) is an awesome little app that turns your phone's storage into a compact wireless file server. Once you share your space, others can log in and access files — you choose the folders to share and set password access. And of course, you can turn it on and off at your pleasure. It's also an ideal way of transferring files when you've forgotten your phone cable and cloud storage isn't an option.



Get IFTTT (IF) to combine your phone with your fitness tracker.



Having root-access opens up full control of your Android phone.



Tasker takes IFTTT to a new level, using almost any Android action.

05 GET XPOSED!

Getting the absolute max from your phone used to mean root-access and a new ROM, but in many cases, the Xposed Framework changes all that. Xposed still needs root-access but enables purpose-built apps to patch into the existing features of your Android OS with over 600 new functions. Start with the Xposed Installer (tinyurl.com/lkvylh) and search out Xposed 'modules', essentially modified .apk apps that do the work. Lollipop broke Xposed and while there is a Lollipop Alpha-build, it's an Alpha, so stick with KitKat/4.4 or older devices for now. Xposed is inherently a security risk, but so is root-access. Backup everything before you try.

06 GET THE BEST CUSTOM RECOVERY

Android actually exists as multiple ROMs — one for the operating system, one for your radio (phone network) and one for your recovery mode. Recovery Mode is the equivalent of your PC's BIOS and it's here you'll get full control when installing ROMs. There are a few recovery ROMs around but we're rather fond of TeamWin's Recovery Project (TWRP). In fact, only TWRP would install the Lollipop ROMs onto our Galaxy S3. If you have an ASUS/Nexus device, an HTC, Samsung, LG or Sony, it's an excellent choice that just works. Have we reminded you to backup before you flash your phone?

ROM Manager keeps track of and updates custom ROMs easily.

07

MANAGE YOUR ROMS

If you're a hard-core Android fan, it's unlikely you're still using the OS that came with your phone. New OS installs or 'ROMs' are available for most phones, but managing them can be a bit of a nightmare. That's where a good ROM manager makes the difference — we're keen on two: ROM Manager (tinyurl.com/7t4hwqv) and ROM Toolbox Lite (tinyurl.com/o28kmpy). ROM Manager can reboot into recovery mode automatically, even help install new ROMs via SD card storage, download ROMs and check for ROM updates. It even has useful extras like partitioning SD cards. ROM Toolbox goes further with CPU over/underclocking and a build.prop editor to reconfigure your OS.

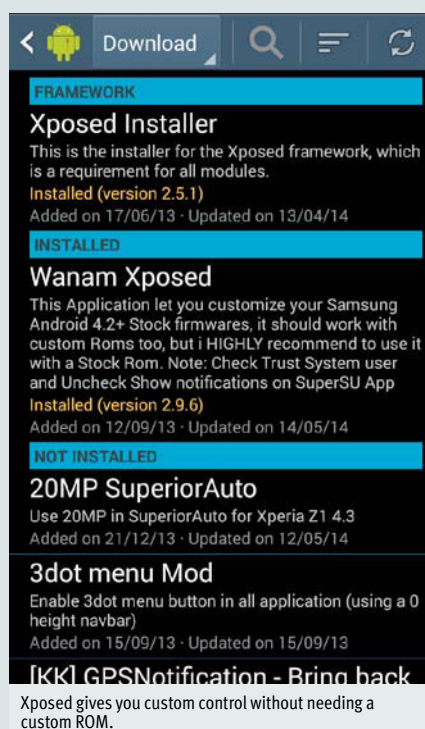
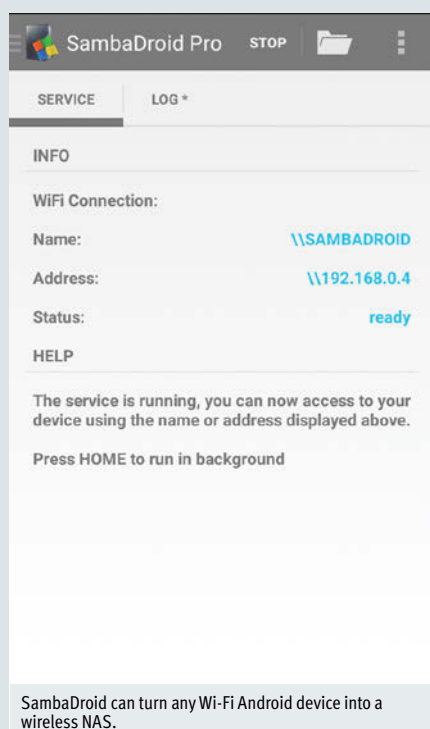


08 CODE ANDROID APPS – ON YOUR PHONE!

Our phones can't survive without apps — so why not give back, learn how to code and write your own Android apps? Get AIDE from Google Play (tinyurl.com/7m2qo9o), learn basic Java coding and write apps right on your phone. AIDE will even compile your apps into .apk files for you. Most Android apps are coded in a full-featured environment such as Android Studio or Eclipse, but if you want to just wet your whistle and try it out, you don't have to leave your phone. Learning to code is the hottest ticket in tech right now, so why not have a go?

09 GET TO KNOW SMART LOCK PASSWORDS

If you're sick of having to sign into multiple services, Google has come up with a neat new feature being shuffled out in new versions of its Google Play Services called Smart Lock for Passwords, essentially a new password manager for Android. To see if you have it yet, launch the Google Settings app and scroll down to Smart Lock Passwords. The idea is that services' passwords are linked to your Google account and taken care of automatically, so you don't have to type them in after the first time signing up. Google has a web interface for it too at passwords.google.com. ■



[TOUGH CASES]

Truly-tough smartphone cases

WANT TO MAKE YOUR SMARTPHONE PRACTICALLY INDESTRUCTIBLE? WE TEST 7 CASES THAT PROMISE JUST THAT.

[STEPHEN LAMBRECHTS]



THERE'S NOTHING SADDER than the sight of a beautiful (and expensive) smartphone that's been broken (OK, maybe the opening ten minute section of Pixar's UP is sadder, but you get what we mean). Cracked screens, deep scratches, bent structures, chipped corners, water damaged and... We can barely continue — the idea is just too painful to bear. All the technological pizzazz in the world means nothing when you're staring at a dead screen through broken glass.

If this is the kind of stuff that fuels your night terrors, or if you're particularly clumsy or butterfingereed, then you should know that there are ways to protect your phone from imminent disaster. A range of truly-tough cases are available for your smart phone that are specifically designed to withstand impact damage, protect your screen, provide resistance from the elements or even make your phone water proof. Some even come with the added bonus of extending your battery life. Here are our picks for the most ruggedly handsome protective phone cases currently available.

Dog & Bone Wetsuit

WILL MAKE YOUR PHONE LOOK MORE RUGGED AND HANDSOME IN A WETSUIT THAN PATRICK SWAYZE.

A UNIQUELY DESIGNED waterproof phone case, the Dog & Bone Wetsuit offers extreme protection at the expense of accessibility, which is probably a trade-off many are willing to make in order to keep their precious tech bone-dry. Featuring a complex three-piece design, your phone literally puts on a rubbery wetsuit and sits inside a plastic frame that clicks on over it. Aided by video tutorials on Dog & Bone's web site which explains how to water test, assemble and disassemble the case, we eventually got our iPhone 6 suited up. This rubberised inner layer makes your phone feel extra secure, as it provides added shock absorption for drops. Interestingly, the screen remains uncovered, which keeps the touchscreen responsiveness normal (you can also opt to use Dog & Bone's glass impact screen guard for added protection), however you'll have to adjust to swiping up from the bottom corners of your screen to reach your iPhone's control panel. Similarly, your Touch ID is a little harder to reach, though it works well enough.

LifeProof Nuud

YOU'LL BE GLAD TO TAKE YOUR PHONE OUT IN PUBLIC IN THE NUUD.

UNLIKE LIFEPROOF'S FRÈ Power case, the Nuud adds very little bulk or weight to your phone, offering massive protection from the elements, while retaining your phone's overall beauty. Its attractive transparent rear casing lets you view your iPhone in all its glory, without sacrificing its overall toughness — this case actually exceeds military shock standards. Just like the frè Power case, the Nuud offers drop protection from up to 2 metres, is waterproof to depths of up to 2 metres, and will protect your handset from dirt, dust snow and ice. Just like the Dog & Bone Wetsuit case (and just like its name would suggest), the Nuud is topless, offering direct, uncovered access to your screen (though an optional scratch protector is included in the package). Its buttons are also far more responsive than the ones found on its chunkier cousin. If you like the LifeProof frè Power's protective capabilities but aren't interested in its costly battery-extending functionality, then the LifeProof Nuud is a no-brainer.

07

SMARTPHONE CASES

HOW WE TESTED

Cases were tested on iPhone 6 and Samsung Galaxy S6 handsets. Each phone case was drop tested from its maximum recommended height and water tested where applicable. Particular attention was paid to the accessibility and responsiveness of each phone's buttons and functions while wearing the protective phone cases.



DOG & BONE WETSUIT

\$80
www.dogandbonecases.com

CRITICAL SPECS

Waterproof (2 metre depth), shockproof (withstands drop to 2 metres), snow proof, dirt proof, dual layer protection, screen guard included, iPhone 5/5s/6 (Samsung Galaxy S6 version coming soon).



LIFEPROOF NUUD

\$90
www.lifeproof.com

CRITICAL SPECS

Waterproof (2 metre depth), shockproof (withstands drop to 2 metres), snow proof, dirt proof, dual layer protection, screen guard included, military tested.



Catalyst Waterproof

SLIM AND FUNCTIONAL WITH IMPRESSIVE WATER RESISTANCE.

THIS EASY-TO-INSTALL WATERPROOF case lets you take your iPhone underwater to the impressive depth of 5 metres, and manages to do so while providing complete functionality despite being completely covered — even Touch ID is accessible through a thin, protective film. All of your buttons are also accessible, though there is a slight loss of responsiveness that will require you to press your buttons a little harder from time to time. However, its integrated touchscreen film protects your screen while maintaining total screen responsiveness. It's also probably the slimmest waterproof smartphone case you're likely to find, with a thickness of 11.4mm for the iPhone 6 version. The Catalyst Waterproof is also rather attractive, with a clear backing and a rubber border that's available in a range of colours. Sound quality is also maintained as the case provides true sound acoustics so your phone calls will always come through crisp and clear. It will also protect your phone from a drop distance of 2 metres.



Dog & Bone Backbone

PROTECTIVE, ATTRACTIVE AND CONDUCTIVE.

HERE'S A SLEEK and attractive phone case that offers wireless charging capabilities as well as overall toughness. It's slick and durable exterior bends just enough for you to slot your phone in for a tight and snug fit, with a detachable segment that slots in from the back and into your iPhone's lightning port. This segment allows for your iPhone to be wirelessly charged on top of the included charging pad. Simply plug the pad into a USB port, and lay your phone on top of it to instantly start charging it. This experience never gets old. In terms of its protective capabilities, this military tested case can withstand drops from around 1.2 metres, which is quite good, but is outdone by Dog & Bone's own Wetsuit phone case, which is also less expensive. A great protective phone case with a brilliant bonus feature, though you may have to weigh the importance of its wireless charging functionality if durability is what you're really after.



tech21 Evo Check & Evo Mesh

BOTH CASES KEEP YOUR PHONE SLIM AND LIGHT WHILE OFFERING PROTECTION.

THESE TWO FEATHERWEIGHT cases from tech21 offer unparalleled shock absorption thanks to FlexShock technology. Impacts are absorbed and repelled through the cases' flexible protection material, giving your phone good drop protection without turning it into an unwieldy brick. With that said, the case's flexibility (which allows you to scrunch it up into a ball) can be pulled off easily, and tech21 offers no drop instance information. The Evo Check, which is suitable for the Samsung Galaxy S6, and the Evo Mesh, which is for the iPhone 6, offer identical levels of protection, and are both very close to each other in terms of design. These cases aren't looking to blow you away with a range of excessive features. Their goal is simple — to protect your phone without compromising its lightness or svelteness. And, if more protection is what you crave, you can opt to apply tech21's incredible Impact Shield screen protector, which is anti-glare and made from the BASF polymer found in bulletproof glass.



CATALYST WATERPROOF

\$70
www.catalystlifestyle.com

CRITICAL SPECS

Waterproof (5 metre depth), shockproof (withstands drop to 2 metres), hard coated optical lens, integrated touchscreen film, iPhone 4/4s/5/5s/6/6 Plus.



DOG & BONE BACKBONE

\$110
www.dogandbonecases.com

CRITICAL SPECS

Wireless charging, shock proof (withstands drop to 1.2 metres), military tested, screen guard included, iPhone 5/5s/6.



TECH21 EVO CHECK & EVO MESH

\$45
www.tech21.com

CRITICAL SPECS

Shockproof FlexShock technology (max drop distance unknown), iPhone 6/6 Plus (Evo Mesh), Samsung Galaxy S6 (Evo Check).

[BUYER'S GUIDE] TOUGH CASES

WHAT TO LOOK FOR IN A
TOUGH SMARTPHONE
CASE.



DROP DISTANCE

Probably the most important factor when choosing a protective case. Your case must be strong to protect your phone from a drop onto cement.

WATER RESISTANCE

If you're looking for a waterproof phone case, make sure it's one that requires an initial phoneless water test.

WEATHER RESISTANCE

Outdoorsy types might want to invest in a phone case that will protect their handset from extreme weather.

WEIGHT

Some protective cases offer extreme phone security at the expense of lightness, but a heavy case will only make your phone more cumbersome.

STYLE

Tough cases come in a variety of styles and colours. Don't just grab the first one you see — take a moment to find one that suits you.

CHARGING

Battery charging/ extending functionality is usually expensive. You probably won't need it unless you're into camping or long hikes.

ACCESSIBILITY

Pick a case that won't obstruct your screen or the various buttons and connections of your phone in any way.

SCREEN PROTECTION

Not every protective case comes with a screen guard, so check the box to see if one is included before purchasing.



LifeProof Frê Power

FANTASTIC THAT IT'S WATERPROOF AND IT CHARGES YOUR PHONE, BUT IT'S STILL SOMEWHAT CLUNKY.

THE LIFEPROOF FRÊ Power case feels as sturdy as they come, adding a significant amount of heft to your handset. This is due to its built-in charging capability, which doubles your phone battery's life, though the trade-off is that it also doubles your phone's thickness. A button on the back of your case is used to switch it to charge mode, with LED lights that let you know how much juice it's got left. It's snow, dirt, dust and waterproof, submersible to depths of up to 2 metres. It can withstand drops from a height of 2 metres, too. While strength is obviously a major selling factor of the Frê Power, accessibility isn't one of its strong suits. Its buttons need to be pushed quite hard in order to register, and its screen doesn't lay flush against your phone, making your touches and swipes unresponsive at times. The LifeProof Frê Power has some great features, but could do with some fine-tuning, especially at such a high price.



LIFEPROOF FRÊ POWER

\$180
www.lifeproof.com

CRITICAL SPECS

Integrated battery pack, waterproof (2 metre depth), shockproof (withstands drop to 2 metres), snow proof, dust proof, screen guard included, iPhone 6.



Urban Armor Gear

AN ATTRACTIVE PHONE CASE THAT WILL PROTECT YOUR PHONE FROM THE AVERAGE CHEST-HEIGHT DROP.

MOST FAMOUS FOR being part of a PR stunt which saw it dropped from space, Urban Armor Gear's phone case offers military-standard drop protection and impact resistance (and styling) in an impressively light armour shell frame. Despite looking like it should be quite grippy due to the hexagonal pattern across its back (which is actually on the inside of the Maverick edition's see-through case), UAG's plastic case feels surprisingly slippery in your hand (though on the plus side, this makes it much easier to pull your phone out of your pocket). Thankfully, rubber skid pads on the case's back prevent the phone from easily slipping off of flat surfaces. The real selling point here though, is its weight, which at around 30 grams feels almost non-existent. It's also easy to slip on and comes in a range of funky colours. With a recommended max drop distance of around 1.5 metres, the UAG isn't the strongest case on the market, but it's probably the lightest and most accessible we've seen.



URBAN ARMOR GEAR

\$45
www.urbanarmorgear.com

CRITICAL SPECS

Shockproof (withstands drop to 2 metres), military tested, screen guard included, iPhone 5/5C/5s/6/6 Plus, Galaxy SIII/ S4/S5/S6, Edge/Note 3/Note 4/Note Edge.





Find the tech for **your world**

[PORTABLE PARTY]

Take the music with you

WANT A COMPACT BLUETOOTH SPEAKER THAT CAN GO ANYWHERE? WE TEST 10 OF THE LATEST AND FIND SOME SURPRISINGLY GOOD BUYS.

[DAN GARDINER]

BLUETOOTH SPEAKERS HAVE become a fixture of the tech scene over the last few years, and while the early models were a bit of a mixed bunch, the good news is that they've (in general) improved markedly since they first landed. This month, we've handed out more awards than in any previous round-up we've conducted — although there are still some models we'd advise you to avoid. No matter what your budget is, however, we've undoubtedly tested something that should fit over the following pages.

In keeping with our smartphone theme, for this feature we asked vendors for their smaller, more portable units — ones that could easily be carried around in a bag without being much of a burden. And in recommending particular devices, we've focused on comparing models at particular price points and sizes. It's actually much easier to assess speakers when you have a whole group to test, as you can spot weak and strong points in a particular unit by comparing how it sounds to its peers.

10

BLUETOOTH SPEAKERS

HOW WE TESTED

To test these speakers, each was paired with a Galaxy Note 4 smartphone and, for horizontally-firing speakers, they were placed on a head-height shelf (rather than a desk) to help the sound propagate and breathe properly. We then loaded a specific Spotify playlist (consisting of 16 tracks from multiple genres) and used these to assessing the bass, midrange and treble performance of each unit, as well as the clarity and volume of both male and female vocals.



TECHLIFE
EDITOR'S
CHOICE
TECHLIFE.NET

Jabra Solemate Mini

IT MAY BE MINI IN SIZE AND PRICE, BUT THE SOUND IS TITANIC.

The Solemate Mini is one of the older models we've reviewed this month — in fact, we first tested it back at the end of 2013, so it's coming close to being 2 years old now. One plus with that age is that it's also the cheapest: it's dropped from its original price of \$99 to a keen \$69. And given how good this tiny unit sounds, that price makes it an easy one to recommend. At 295g, it's clear that the Solemate Mini is smaller than most here, but despite that it manages to output full-bodied sound that's even better than some of its bigger rivals — especially when it comes to being well-balanced. There are two 1.5-inch full-range drivers inside, plus a large bass radiator, with a total power output of 6W RMS. But it sounds a lot bigger than that thanks to good tuning: the designers have focused on the midrange, meaning there's a warmth and richness to anything you play back — and that ultimately goes a long way to making most music sound good. And overall, there's decent clarity and enough bass to be pleasing. Jabra hasn't neglected other features, however: there's a tough cloth bag to protect the unit, NFC pairing and a built-in microphone too. Even that battery life, at 8 hours, is good. This one packs amazing value and sound into a very compact chassis.



JABRA SOLEMATE MINI

\$69
www.jabra.com

CRITICAL SPECS

2 x 1.5-inch full-range drivers @ 3W RMS each, bass radiator, 94dB sensitivity, Bluetooth, NFC pairing, inbuilt mic, 3.5mm aux input, 8 hour battery life, 295g.



TECHLIFE
EDITOR'S
CHOICE
TECHLIFE.NET

Klipsch Gig

THE GIG YOU'LL NEVER GET TIRED OF LISTENING TO.

Klipsch is a well-regarded American audio brand that's famous for both PC and hi-fi speakers as well as headphones, and it's also ventured into the Bluetooth arena. Now, while the Gig is actually a couple of years old (it was originally released in 2013), don't let that dissuade you: this is a great speaker that's stood up to the test of time with aplomb. The biggest model we tested (although not by a huge margin), the Gig is conversely not too heavy at 600g. And it has an unusual design, with a large plastic band that wraps around the outside of the speaker and can be folded out to expose the controls, or support the main speaker unit in portrait orientation. Where the Gig really excels is in sound: it has great clarity and a wide acoustic range that reaches from the top high notes right down into deep bass. It was easily the most flexible speaker we tested, powered by two full-range 1-inch drivers that have a two-way bass radiator array sandwiched between them; the latter helps to boost the bottom end performance. As with many, they do definitely have a sweet spot in terms of volume and performance — they need to be used at a moderate level to get the best balance and that full-bodied feel. The only thing really missing is water/dust-proofing, but with NFC, a solid 12-hour battery life and a keen \$200 price, that's hardly worth mentioning.



KLIPSCH GIG

\$200
www.klipsch.com.au

CRITICAL SPECS

2 x 1-inch full-range 5W drivers, 2 x 2-inch passive bass radiators, 77Hz-20kHz frequency response, 96dB sensitivity, Bluetooth, NFC, 3.5mm aux input, 12-hours battery life, 600g.



Bose SoundLink Mini II

LIVES UP TO THE NAME ON AUDIO... AND PRICE.

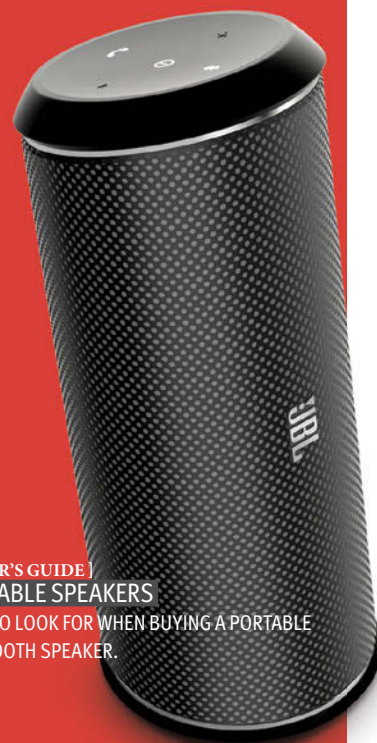
As with most Bose gear, the company's light on details and specs for the SoundLink Mini II (SM2), but from some quick external inspection, there seem to be two drivers in the front and a bass reflex port in the back. This is a classy-looking and surprisingly weighty little unit at 670g, with a single-piece of aluminium that wraps around the chassis, and it has some nice user-friendly features, like speaking you through Bluetooth pairing as well as saying the name of the device that's currently paired. It includes a silicon-rubber charging cradle that you can set it onto when you need to charge it — unlike most others here, there's no fiddling around with ports, flaps, cables or plugs. And the audio output is outstanding — rich, clear and precise, with a healthy body to the midrange and enough depth to the bottom end that you're not left wanting. If we had one complaint, it's that the SM2 really needs to be cranked up to a moderate level to get the audio balance right. It does lose a bit of detail in complex tracks, too, but that's not uncommon at this size. And Bose has ticked the necessary feature boxes too, with a built-in mic for voice calling, 3.5mm aux input and a 10-hour battery. There's no NFC, sadly, but pairing is quick and easy regardless. The SM2's undeniably pricey but if you want a fantastic mix of high-quality audio and neat portability, this one could be worth it.



Philips BT6000B

A RESPECTABLE ALL-ROUNDER.

Mixing in good features — it's IPX4 splash proof, has a built-in mic and NFC pairing — with fine audio performance, Philips' BT6000B offers 360° sound output, with a driver and bass radiator on each 'side' of the unit. Those drivers are reasonably punchy, 1.5-inch jobs (at 6W RMS each) and they're opposingly positioned to have a bass-radiator behind each one (so one side has the driver above the radiator, while the other side is switched), which seems to help with lower-mid performance. We get the feeling Philips has designed this unit to be best-used standing upright, although there is a flat silicon-rubber section along one side that keeps it stable if you want to use it in 'landscape' orientation. This was one of the best all-rounders this month, with enough flexibility to handle multiple music genres and have them all sound pleasing. It doesn't have the deepest bass, but everything from the lower-mids right up to the treble tips is well reproduced, with no real signs of distortion or clipping. The BT6000B is a little light on some features: there's only a single button on the unit (which does double-duty for Bluetooth pairing and activating voice-calling). Volume and power are adjusted by a rotary dial on the top of the unit. Still, the battery life is at least good — around 8 hours — and, generally speaking, this one does live up to its \$200 price.



[BUYER'S GUIDE] PORTABLE SPEAKERS

WHAT TO LOOK FOR WHEN BUYING A PORTABLE BLUETOOTH SPEAKER.

DRIVER SIZE

Generally, the bigger the driver/s the louder and deeper a speaker can go. If you want lots of bass at high volumes, look for larger drivers.

WATTS RMS RATING

This is another indicator of how loud and powerful a speaker can get. The higher the better. Ignore any 'watts PMPO' ratings; they're complete BS.

BATTERY LIFE

This can vary significantly from brand to brand and speaker to speaker, so check the specifications before committing — you may be surprised how little battery some units offer.

NFC PAIRING

This makes connecting to a speaker easier with an NFC-equipped smartphone; you just hold your phone to the device and a pairing prompt will appear on screen. iPhones lack NFC, although most Androids offer it.

CARRY CASE

Some speakers offer a carry case to help protect from dirt, liquid and falls. If you're going to be travelling a lot with your speaker, this could be worth seeking out.

WATER AND DUST PROOFING

Many Bluetooth speakers now feature some sort of ruggedisation, with the best displaying an actual IP rating, telling you what kind of water and dust conditions they can withstand.

INBUILT MICROPHONE

If you want to be able to use your Bluetooth device as a speakerphone, look for one with a built-in mic.



BOSE SOUNDLINK MINI II

\$299
www.bose.com

CRITICAL SPECS

Driver size and power not specified, inbuilt mic, Bluetooth, 3.5mm aux input, includes charge cradle, 670g.



PHILIPS BT6000B

\$200
www.philips.com.au

CRITICAL SPECS

2 x 1.5-inch drivers @ 6W each, 2 x bass radiators, IPX4 waterproofing, Bluetooth, 3.5mm aux input, NFC, inbuilt mic, 8 hour battery life, 490g.



Sony SRS-X2

PLAIN LOOKING, BUT SOLID WHEN IT COMES TO PERFORMANCE.

Available in red, white and black the SRS-X2 could kindly be described as having ‘discrete’ looks — it’s pretty plain. That’s not a bad thing — not everyone needs an attention-grabbing speaker — and this Sony unit does benefit from good design, with a clean array of controls on the top, NFC pairing and a soft and well-wearing silicon rubber case (although as with basically every other unit with this finish, hair and dust does have a tendency to stick — so get used to wiping it clean). Acoustically, it’s quite strong in the midrange, with music filling out nicely and accompanied by nice full, clear vocals; it suits pop and rock particularly well. It’s not perfect — there’s still a bit of a hole in the upper mids, but this is better balanced than most speakers at this size. While the bass doesn’t go hugely deep (we suspect you’d need to upgrade to the SRS-X3 for that, which features passive bass radiators), there’s enough there to have some punch at moderate volumes. There’s also a virtual surround feature (turned on by pressing a button on top) that actually does a nice job of widening the soundstage of most types of music — we left it turned on in testing. This is a reasonably well-balanced and compact unit that punches above its weight.



UE Roll

A VERY PORTABLE SPEAKER THAT’LL HAVE YOU ROCKIN’.

Looking like nothing so-much as a giant Smartie, the 135mm-diameter disc-shaped Roll largely matches Ultimate Ears’ other ruggedised Bluetooth speakers: the Boom and Megaboom. That means a bright and colourful style, but also plenty of toughness. It’s IPX7 waterproof, meaning that you could literally use it in the shower, and an elasticated, braided loop of rope on the underside of the Roll further reinforces this, letting you easily hang it from your shower head, or anywhere else that happens to be convenient. The Roll may be the baby of the UE Bluetooth range, but thankfully it’s quite grown-up in terms of sound, capable of filling a moderately-sized room with pleasing acoustics. As always, we found elevating the device delivered the best results (which in this case meant hanging it from a coat hook on the back of a door) but even laid flat on a desk, pumping sound upwards, it still produced well-balanced music with clear highs and full mids. While it’s outperformed by its bigger siblings at the bottom end, the Roll’s no slouch when it comes to bass either: there’s enough that you can feel it (just). That 9-hour battery life is also admirable. At the time of testing, the Roll was so new we weren’t able to get street pricing, so hopefully that highish price should be a little lower, too.



JBL Flip II

PRETTY FLIPPING’ GOOD VALUE.

JBL’s Flip II (and its forebear) are a little unique in terms of design. Rather than being a straight cylinder like many competitors, the plastic chassis is asymmetrical, with angled ends to its main body. This means that in both orientations (stood upright or laying lengthways on its side) the speaker drivers are tilted upwards — meaning it sounds a bit better when used at desk height than many others. And powered by two 40mm drivers and a bass port, the Flip II does generally sound OK — its vocal performance, in particular, is worth highlighting, with both male and female voices coming through clear and strong, and there’s enough lower-mid bass output to have a pleasing bit of impact. The main shortcomings? They’re a bit muffled at the top end and the midrange isn’t as warm or full as we’d ideally like. The battery life could also be better: around 5-6 hours at moderate volumes is just passable. And it’s not very physically stable when laid lengthways — it rocks back and forward if tapped, so if you’re looking for something to sit on your car’s dashboard, this wouldn’t be our first choice. What is admirable is that, despite the sub-\$100 price, the Flip II does come with some premium features: a built-in mic for taking calls, NFC pairing and even a faux-leather carry case, which zips shut to keep the whole unit clean and undamaged.



SONY SRS-X2

\$130
www.sony.com.au

CRITICAL SPECS

2 x 45mm full-range drivers @ 10W RMS each, NFC pairing, 5 hours battery life, 495g.



UE ROLL

\$150
www.ultimateears.com

CRITICAL SPECS

1 x 2-inch driver, 2 x 3/4-inch tweeters, 108Hz-20KHz frequency response, 85dB sensitivity, Bluetooth, 3.5mm aux output, 9-hours battery life, 330g.



JBL FLIP II

\$95
www.ehifi.com.au

CRITICAL SPECS

2 x 40mm drivers, bass port, NFC pairing, 5 hours battery life, 385g.



Sol Republic Punk

A STRANGELY RESPECTABLE LITTLE PUNK.

The Punk was the smallest and most-compact unit we tested — it's a disc-style speaker that sits flat on its back and projects audio upwards. There's no stand, so if you want your it to face you horizontally, you'll need to prop it up against something. (There's also a screw socket on the base for mounting it on a tripod, but with its small size that'd honestly look a little ridiculous.) Despite those compact dimensions, however, the Punk is surprisingly well-balanced. Sure, pump it up too loud and things start to get a little shrill and distorted, but at moderate and low listening levels it's actually a good-sounding unit — one we could happily listen to for hours on end. And while it's a little poor in some areas — there's no NFC, for example, and no mic for voice calling — its battery life for such a small unit is excellent at 8 hours, and Sol Republic also claims water, dust and drop resistance (although there's no IP rating given). The real obstacles for the Punk are that it has some very solid competitors — there's JBL's substantially bigger Flip II at around this same \$100 price. And while the Punk was so new that we couldn't get street pricing at the time of our review — so it should come in at least a good \$10-\$15 cheaper — with the excellent Solemate Mini going for \$69, this little unit still has its work cut out for it.



Skullcandy Air Raid

COVER YOUR EARS — THIS ONE CAN GET LOUD.

With its muscular military stylings — a thick silicon rubber cover and stainless-steel faceplate — and 825g weight, the Air Raid certainly looks and feels like its ready to be taken into battle — at least in terms of withstanding physical punishment. Skullcandy does back that up, stating it's both drop and water resistant, although it doesn't provide an IP rating. And although underneath that rugged exterior the Air Raid's main body is still ABS plastic — like most of the others here — it does theoretically have another advantage in the audio department: bigger drivers, specifically twin 50mm units. With most others having 40mm units, at best, that extra size lets the Air Raid reach a little deeper into those bass notes, which subsequently are pleasingly rumbley. You're not sacrificing highs, however, which were still clear and filled with detail in our testing. No, where these do stumble a bit is in the midrange — there's just not a lot there to fill out the body, meaning lots of tracks end up sounding a bit anaemic. That's a shame, because there are other features to like here too, like the 14-hour battery life and a price tag that's quite reasonable for a speaker of this weight and spec. Ultimately though, that lack of midrange is a bit of a let-down. This is one for those who like it loud and deep, but not much else.



Braven 705

COULD REALLY DO WITH A BRAVER PRICE.

The Braven 705 brings an extra feature to the table that no other speaker here offers: a dedicated 5V/1A USB-out charging port. This means you can plug your smartphone into the 705 and draw from the internal 1,400mAh battery if you're running a little low on juice. In terms of design, the outer-shell/grill is a single piece of hard plastic (available in a wide range of striking flouro shades) that wraps around the entire unit. There're large rubber playback/volume/power buttons on one end, and a rubber-flap covering the charge ports, battery-indicator lights and 3.5mm aux input and output on the other. There's a small mic in the top for taking calls, the battery life is respectable at 12-hours and it's comparatively light to carry too — just 340g. On the downside, the 705 kind of falls over when it comes to music playback. The audio balance isn't great — while there's a healthy amount of treble and generally good clarity, this unit doesn't have the strongest midrange, leading to slightly reedy acoustics at lower and medium volumes. Throw on some Adele, for example, and her soulful vocals come through nice and clear, but the backing piano is a little anaemic. The price also needs work, especially considering there's no NFC: with better-sounding speakers coming in at a good \$50 less and including NFC, that makes this one hard to recommend.



SOL REPUBLIC PUNK

\$99.95
solrepublic.com

CRITICAL SPECS

6W RMS total power, 150Hz-20KHz frequency response, 3.5mm aux in/out, water/dust/drop resistant (no IP rating given), 8-hour battery life, 185g.



SKULLCANDY AIR RAID

\$200
www.skullcandy.com

CRITICAL SPECS

2 x 50mm drivers, Bluetooth, 3.5mm aux input, 14-hour battery life, 825g.



BRAVEN 705

\$180
www.braven.com

CRITICAL SPECS

Two drivers (size unspecified) and one bass radiator, 1,400mAh battery, USB-out charge port, inbuilt mic, IPX5 waterproof, 12-hour battery life, 340g.

[CHARGE]

Pocket-sized power banks

PACK YOUR POCKET FULL OF POWER.

[LINDSAY HANDMER]

BIG HULKING 10,000MAH power banks are all well and good at charging a phone multiple times, but aren't the best for slipping into a pocket. So we rounded up six super compact models that can at least give a phablet a full charge. While we tested stand-alone models, it's also worth noting that more and more devices such as Bluetooth speakers are getting power banks built in. For testing, we used a custom monitoring setup to track current and voltage and give a real world usable capacity for each power bank. Due to efficiency losses, this number is lower than the rated capacity, but still enough to bring your phone back to life. For example, the iPhone 6 Plus has a 2,915mAh battery, while the Galaxy Note 4 has a 3,220mAh capacity.

	2.1A CHARGING	RATED CAPACITY	REAL WORLD CAPACITY	PERCENTAGE
Adata PV100	Yes	4,200 mAh	3,864 mAh	92%
BlueEye NP3000	Yes	3,000 mAh	2,940 mAh	98%
Luxa2 TX-P1	Yes	5,000 mAh	4,250 mAh	85%
Jaycar	Yes	4,000 mAh	3,480 mAh	87%
Sony CPV3AB	Yes	3,000 mAh	2,970 mAh	99%
Vantec Power Gem	Yes	3,500 mAh	3,150 mAh	90%

HOW WE TESTED

We used a custom power monitoring setup to measure current and voltage over time for a full charge and discharge cycle. From this data we calculated real world capacity and then further calculated what percentage this 'real world' capacity is vs the rated one.. We also tested the current draw when charging the power bank and measured recharge time.



Adata PV100

SUPER SLIM AND STYLISH.

At just 8mm thick, 118mm tall and 67mm wide, the PV100 mimics the dimensions of a petite smartphone and is smaller than a phablet. It's also available in pink, blue, black and white so it stands out. Unlike the typical plastic, it has an extra robust metal back. The PV100 has a 4,200mAh capacity, with a decent 92% (3864 mAh) actually available for charging. It only has a single USB port, but on the plus side it can charge at 2.1A. The remaining charge is indicated by 4 blue LEDs, though it tends to stay at 3/4 for a long time then suddenly drop. It's not a huge loss at this lower capacity (and price), but a second USB port would have been nice.



ADATA PV100

\$29
www.adata.com

CRITICAL SPECS

4,200mAh capacity, 1 x USB port, 2.1A fast charge, 105g.



BlueEye NP3000

AVAILABLE IN PIMP GOLD, OR SLEEK GRAY.

The BlueEye power bank only has a 3,000mAh capacity, but we can forgive that considering 98% (2,940mAh) is available. It also helps that it's just 65 grams and measures a tiny 101 x 61mm and is just 7.6mm thick. Even better, it has Micro USB and Lightning plugs built in, so you don't need to carry any extra cables. Of course iPhone owners might find it annoying that you can only charge it via micro USB, and we really wish it also had a standard USB port. While rated for 1A, the NP3000 had no trouble charging at 2A and can fully charge an iPhone 6 Plus, but not some larger capacity phablets. It's a touch pricier than the competition, but the tiny size and inbuilt cables are worth it.



BLUEEYE NP3000

\$49
www.encomtech.com.au

CRITICAL SPECS

3,000mAh capacity, 2 x USB cables, 2.1A fast charge, 65g.



Luxa2 TX-P1

POWER BANK CHARGING GOES WIRELESS.

If you are lucky enough to have a phablet with wireless charging (or can add it via a cover) then you know how hard it is to go back to plugging in your phone when using a power bank. Thanks to Luxa2, you don't have to anymore. The Qi compatible device is only rated to charge at 1A, but we found the single USB port manages 2A. Due to lower wireless charging efficiency, you can expect to only access about 85% (294) of the capacity wirelessly, though that's more than enough for a phablet.

The downside is the unit is larger and heavier than most power banks, at 17 x 72 x 137mm and 215g. It also commands a hefty price premium, but it's worth the cost if you love wireless charging.



LUXA2 TX-P1

\$75
www.luxa2.com

CRITICAL SPECS

5,000mAh capacity, 1 x USB port, 2.1A fast charge, 215g.



Jaycar 4000 mAh Power Bank

OFF THE GRID CHARGING.

A power bank is incredibly useful, unless of course you forget to charge it. The Jaycar model helps by incorporating a solar panel, though it does take a good 3 days in the sun to reach full capacity. Solar increases the cost to the unit, but still, it's a handy feature for those who like to head off the beaten path. The Jaycar power bank has 87% (3,480mAh) of its capacity available for real world use, which is more than enough for even the biggest phablet. The single USB port can supply 2.1A for fast charging. You also get a very handy inbuilt Micro USB cable and USB charge cable, plus a second Micro USB input. The power bank is reasonably compact too, at 124 x 71.5 x 16mm and weighing 120g.



JAYCAR 4000 MAH POWER BANK

\$64.95
www.jaycar.com.au

CRITICAL SPECS

4,000mAh capacity, 1 x USB ports, 2.1A fast charge, 120g.



Sony CPV3AB

JUST ENOUGH JUICE FOR YOUR PHABLET.

The Sony only has a 3,000mAh capacity, but fortunately uses high quality cells and has 99% (2970) of that available. Still, it's only just enough to bring your iPhone 6 Plus back from dead to a full charge, and not quite enough for a Note 4 unless you start from 10% charge. The CPV3AB only has a single USB port, which is rated to 1.5A. In practice, we had no problem getting a full 2.1A charge out of it, so it can handle thirstier devices. The real reason to opt for the Sony over the slightly larger capacity competition is the small size and weight at 38.8 x 99 x 19mm and 86g. Be careful when purchasing — there is an older 2,800mAh model still available that is best avoided.



SONY CPV3AB

\$39.95
www.sony.com.au

CRITICAL SPECS

3,000mAh capacity, 1 x USB port, 2.1A fast charge, 86g.



POCKET-SIZED POWER BANKS



Vantec Power Gem 3500

MORE THAN THE TYPICAL SILVER OR BLACK RECTANGLE.

For those who want a little style, the Power Gem is available in black, white, blue and pink.

Out of the 3,500mAh capacity, it has a decent 90% (3150 mAh) of the rated charge available, so will happily charge your phablet from dead to full. It's got two USB ports, one of which is rated at 1A and the other at 2A. In our testing we found both operated at the full 2 amp capacity, but not at the same time. So you can get a fast charge, but it will slow down if you plug in two devices. The Power Gem measures in at 113 x 59 x 15mm and weighs 104g, so is small and thin enough to slip into a pocket.



VANTEC POWER GEM 3500

\$35
www.vantecusa.com

CRITICAL SPECS

3,500mAh capacity, 2 x USB ports, 2.1A fast charge, 104g.

[TYPIST TOOLS]

Let's get physical

NEED TO GET REAL TYPING DONE ON YOUR SMARTPHONE? SUPERCHARGE IT WITH A PHYSICAL KEYBOARD.

[JOEL BURGESS]

AT FIRST GLANCE, you may think that a physical keyboard for your smartphone is say... overkill, but once you've used one, you slowly realise just how much better your smartphone could be as a productivity device with some decent-sized keys. Now to be fair, not all the keyboards we've reviewed this month offer enough to shake that preconception, but on the whole, these ultra portable letter puncher-outers were so versatile that we were left marvelling at how much easier and more efficient typing tasks became.

Versatility is the key in this equation and our favourites were those that worked equally well with tablets, smartphones and home media players, turning all of them from painstakingly slow 'only-option' typing devices into reasonably effective mini typing factories. Seriously — trying to search for something using the Apple TV's four-button remote is enough to make you want to hurl the whole device in the too-hard basket. After using a sub-\$100 keyboard that can switch between your smartphone and your media player at the push of a button, any doubts you might have had about the necessity of a mini multi-device keyboard will quickly disappear.



Microsoft Universal Mobile Keyboard

A SOPHISTICATED KEYBOARD FOR SMARTPHONE POWER USERS.

IT'S TRUE THAT Microsoft has increasingly been opening up its software to those using non-Windows OSs, but we didn't imagine that this would result in a smartphone keyboard that works better on Android and iOS devices than on Microsoft's own Windows Phone OS. Yet the Universal Mobile Keyboard (UMK) does just that... and despite that, it's still awesome. This compact unit is formed by two folding parts; a rigid but rubbery top cover (which doubles as a detachable tablet or smartphone stand) and a neat raised-key keyboard. It was one of the only devices we tested that offered a stand for displaying the device it paired with, so despite the fact it didn't securely hold all the phones, we still found this feature to be a significant drawcard. Most importantly though, the UMK is as nice to type on as a super-mobile keyboard can be. It has well-spaced keys that can be found without looking and considering it had the second smallest form factor, the UMK felt relatively spacious. We would have perhaps liked to see a Home button added to the shortcut controls at the top, but overall we were extremely satisfied with the UMK.



Logitech Keys-To-Go

A WELL DESIGNED KEYBOARD-COME-PLACEMAT.

WHEN IT COMES to portability, Logitech has outdone itself with the Keys-To-Go keyboard. Wrapped in either a red, powder blue or black fabric finish that's both waterproof and wipeable, you don't have to be concerned about using it in amongst your take-away lunch. And though the Keys-To-Go covers a larger surface area than both the Verbatim and Microsoft keyboards, it's significantly thinner, making this soft flexible keyboard feel like exactly the kind of thing you could take and use anywhere. But this form factor isn't just good for portability; that little bit extra surface area also makes it the most comfortable to type on... at least initially. Despite having somewhat shallow keys, the buttons have distinct endpoints and the soft fabric cover is pleasant to the touch. Unfortunately, the keys only protrude to the width of the fabric, which makes it pretty difficult for you to know where your fingers are without looking, and the Bluetooth connectivity was both a little less robust and a bit more fiddly to configure than some of the other keyboards. With a useful selection of shortcut keys lining the top edge, the Keys-To-Go does offer a lot — the only thing we really missed was a stand to support your smartphone.

04

KEYBOARDS

HOW WE TESTED

Using a Motorola Moto X, an iPhone 5, a Microsoft Lumia 640XL and just for good measure an Apple TV, we connected each of the keyboards to all the compatible devices and used them to type emails, SMSs and notes using a range of applications. We also lugged the smartphone keyboards between home and work to test portability.



MICROSOFT UNIVERSAL MOBILE KEYBOARD

\$75
microsoft.com

CRITICAL SPECS

Compatible with Android 4+, iOS 6+ and Windows 8/RT, 10 min charge approx 8 hours usage and overnight charge lasts up to 6 months, 3 way multi-device key and stand.

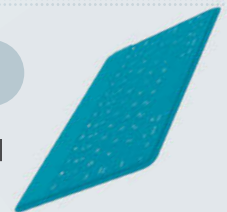


LOGITECH KEYS-TO-GO

\$70
logitech.com

CRITICAL SPECS

Compatible with iOS, Android and Windows 7, water-resistant fabric cover, up to three months usage from fully charged battery.





Logitech K480

A GREAT — BUT NOT-SUPER-PORTABLE —
SMARTPHONE AND TABLET KEYBOARD.

THE LOGITECH K480 may seem like a bit of a dinosaur compared to the others here. It's not only enormous — occupying the same amount of space as a laptop keyboard and being roughly twice as thick — but it also requires you to use AAA batteries to power it. In terms of portability, well... compared to a pile of bricks, it's great. If you're OK with setting it up as a permanent feature on your desk, the Logitech K480 starts to look significantly more appealing. Firstly, it's the only device that connects almost universally to any smartphone or tablet. On top of this, it's separated its Bluetooth connection buttons, with a knob that allows you to pair three separate devices (running any mobile OS) and swap between them instantly just by turning it. Throw in a solid device stand — the K480's cumbersome nature is actually good for adding stability here — that allows multiple, large and small devices to be displayed in various orientations, and the Logitech is a solid smartphone keyboard option. With a full-sized keyboard and great connectivity, the K480 excels as a keyboard, but we wouldn't want to be moving it about a lot.



LOGITECH K480

\$30
logitech.com

CRITICAL SPECS

Compatible with Windows, Mac, Chrome OS, Android, iOS and Windows Phone, up to 2-years charge using two AA batteries.



Verbatim Ultra-Slim Bluetooth Keyboard

FOR GRAMMAR REBELS.

SUPPORTED UNDERNEATH BY a sturdy metallic base and framed in a powdery matte-black finish, the Ultra-Slim Bluetooth Keyboard has been fused with the premium materials of flagship smartphones. This portable keyboard is also the most compact, covering less surface area than the Keys-To-Go, while being almost as thin. The key mechanics have a good spring to them, with decent depth and a nice solid end position. We do have one serious gripe however. Now, we understand that when you're attempting to cut size out of a keyboard there's going to be some sacrifices, but with so many areas to trim, it's all about cutting the dead weight from the ground up. Unfortunately, whoever designed the Ultra-Slim Bluetooth Keyboard had very little regard for the tiny 'completely unnecessary' grammatical key known as the inverted comma, which has been uprooted from its traditional spot (next to the Enter key) and thrown down next to the Z. If you happen to be a smartphone power cowboy with a penchant for grammatical rebellion then this is the keyboard for you, but if you're a more traditional typist you're probably going to find the key shuffle infuriating.



VERBATIM ULTRA-SLIM BLUETOOTH KEYBOARD

\$45
verbatim.com

CRITICAL SPECS

Compatible with iOS 4+, Android 3+ and HID keyboard supported devices.



[BUYER'S GUIDE] WHAT TO LOOK FOR PORTABLE KEYBOARD.

SIZE

There is a delicate size trade-off that occurs with smartphone keyboards. Smaller options might be more convenient, but there's a point where the discomfort of such squished keys outweighs the portability factor.

MOVED KEYS

Keep an eye out for rearranged keys. Despite seeming like an obvious sacrilege, some smartphone keyboard manufacturers will slightly rearrange keyboard layouts as they attempt to squeeze everything in.

KEY STYLE

Are the keys raised and separate from the base, do they click or spring, how much space is there between keys and are the keys proportional to one another? All important personal preferences.

MULTI-DEVICE BUTTON

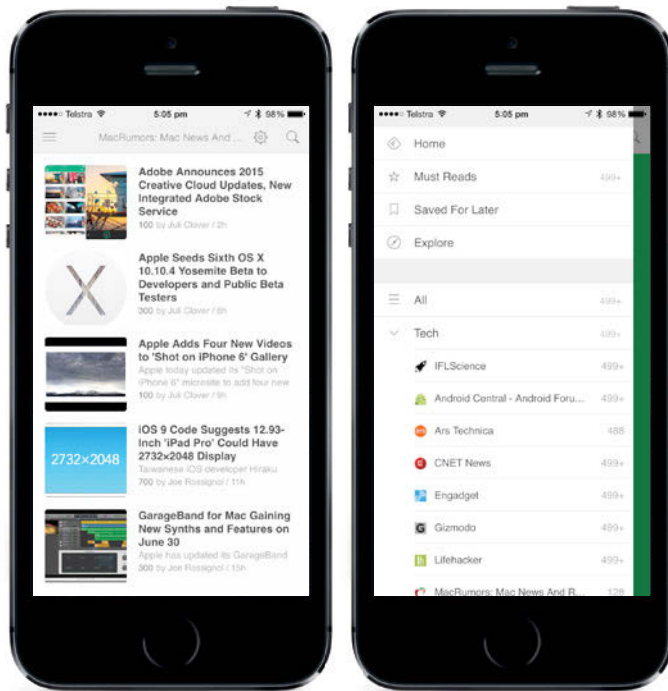
This was a great time-saving feature we saw on a couple of the devices tested, giving you the ability to flick between multiple paired devices using a button or tab on the keyboard.

COMPATIBILITY

Though most Bluetooth keyboards will work with Android and iOS without problems, some were only compatible with certain Windows tablets. Double-checking that a device will connect to everything you need it to is worthwhile.

BUILT-IN STAND

Sure, you can buy a smartphone stand for under \$10 on eBay, but once you add shipping and consider that it is another bit of kit you'll have to carry around, it's more convenient to just look for a keyboard with this feature built in.



[MULTIPLATFORM APPS]

Must-have cross-platform apps

THE MULTI-PLATFORM IOS AND ANDROID APPS THAT WE RECKON SHOULD BE ON EVERY SMARTPHONE.

[STEPHEN LAMBRECHTS AND JOEL BURGESS]

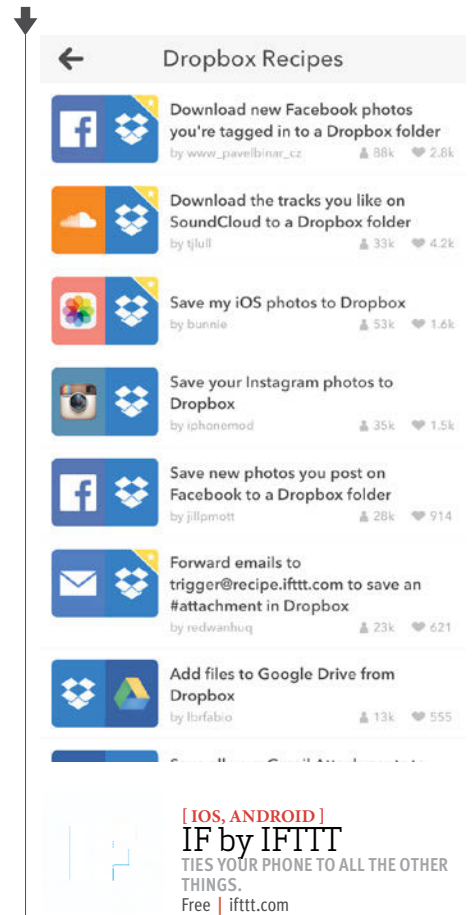


[IOS, ANDROID]

Feedly

A GREAT WAY TO GET THE NEWS FROM YOUR FAVOURITE SOURCES IN ONE PLACE.
Free | feedly.com

One of the more attractive RSS reader apps available across multiple platforms, Feedly gives you quick access to all of your news feeds in a way that's clean and easy to navigate. Subscribed feeds flick out the left side of the screen then hide when you aren't looking at them, allowing your whole screen to be used for Feedly's large, image and text-filled preview window. You can mark items as 'Must Reads' or you can save them for later. With simple Facebook and Google login functionality, Feedly is your best bet when looking for a platform-agnostic reader app. [SL]



Web-based service IFTTT (an abbreviation of 'If This Then That') is known for allowing users to create their own conditional statements or 'recipes' to activate other web services, such as Facebook, Gmail, Google Drive and more, to create a desired effect. For instance, you can create a recipe to keep a log of your phone calls in Google Drive. The mobile version, called IF, lets you create recipes around services like Dropbox, Twitter, Nest Thermostat and more. If you're the kind of person that's constantly connected and has user accounts for pretty much every service imaginable, you'll find IF to be invaluable. [SL]



[IOS, ANDROID]

DROPBOX

ACCESS TO YOUR FILES ACROSS ALL DEVICES.
Free | www.dropbox.com

Never be away from your important documents again — Dropbox allows you to carry all of your files around in your pocket (so long as your pocket is housing your smartphone). An unbelievably convenient cloud storage solution, Dropbox will sync your documents across any device that you've logged into. Dump your files into a Dropbox folder on your computer, and watch them pop up on your phone, tablet and other devices. While you only get around 2GB of storage with the free version of Dropbox, you can upgrade to 1TB of space for just AU\$12.99 a month. [SL]

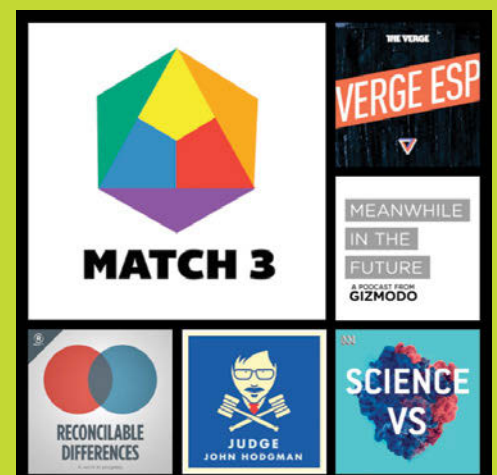


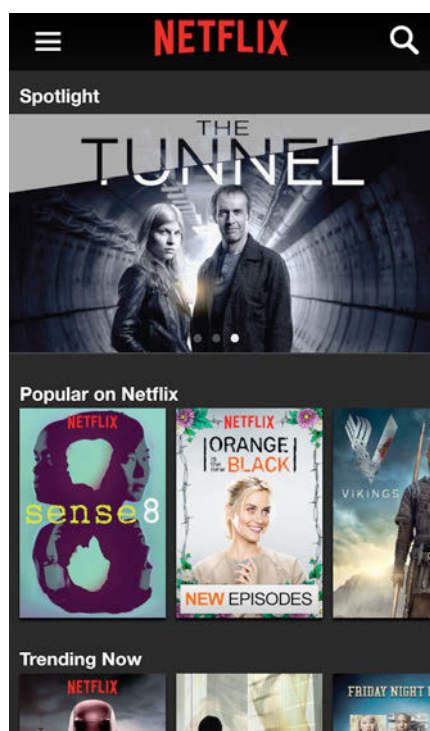
[IOS, ANDROID]

POCKET CASTS

THE ORIGINAL HOME OF PODCASTS.
\$4.99 | shiftyjelly.com/pocketcasts

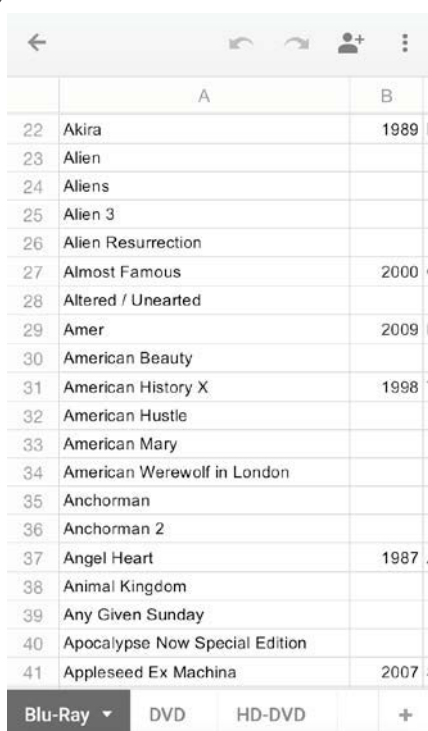
Pocket Casts has been streaming bite-sized audio shows since before iTunes even knew what a podcast was, and in that time the Aussie developers of this app have managed to keep it on top of the long list of podcast managers that have popped up since. A discover section features curated lists of the trending, most popular and featured podcasts, making it easy to find new stuff to listen to. It'll also keep all your subscriptions in the one place and it can be set to automatically download new episodes when you're connected to Wi-Fi. If you regularly listen to podcasts this app will make all the difference. [JB]





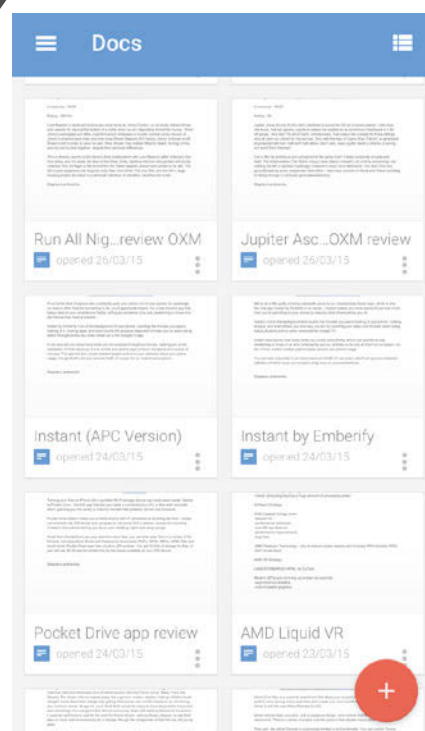
[IOS, ANDROID]
Netflix
 THE WORLD'S FAVOURITE WEB-TV CHANNEL.
 Free (Netflix subscription required) | netflix.com

There's a reason why Netflix is estimated to account for close to a third of America's total internet bandwidth during peak streaming times; it's the best TV and movie streaming service out there. The subscription internet TV giant's app is streamlined, simple to use and effective at playing your favourite shows seamlessly. Netflix's local servers will also detect the speed of your smartphone's internet connection and feed you the appropriate size video, so it loads without having to wait for buffering. The only caveat: you probably won't have a mobile data plan that can handle all the TV you want to watch. [JB]



[IOS, ANDROID]
Google Sheets
 THE BEST CROSS-PLATFORM SPREADSHEETS.
 Free | tinyurl.com/nrs6a7p

Google's suite of completely free, cloud-based productivity apps are hard to beat when you've got some work that needs doing and Microsoft Office's more advanced features aren't needed. Google Sheets lets users create spreadsheets that can be edited across any device, so long as it's logged into your Google account. And, just like with Google Docs, any changes you make in a spreadsheet are instantly saved on the cloud and accessible from all of your other devices. The same goes for the ability to share your work with others and allow them to contribute to your spreadsheets. [SL]



[IOS, ANDROID]
Google Docs
 THE BEST CROSS-PLATFORM WORD PROCESSOR.
 Free | tinyurl.com/nfr6a85

Google's cloud-based productivity apps have changed the game in terms of convenience, with Google Docs being especially useful. Acting as a free alternative to Microsoft Word, Google Docs does practically everything you'd want a word processing apps to do, and then some. Login with your Google account and suddenly your documents are accessible across all of your devices. Changes to your files are instantly saved on the cloud, so you can start writing something on one device, and continue it on another without missing a beat. You can also invite others to view and edit your documents in real time. [SL]

[IOS, ANDROID]
VSCO CAM
 ONE OF THE BEST PHOTO EDITING APPS AROUND
 Free | vSCO.co/vscocam

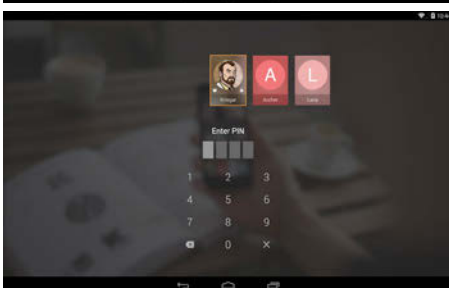
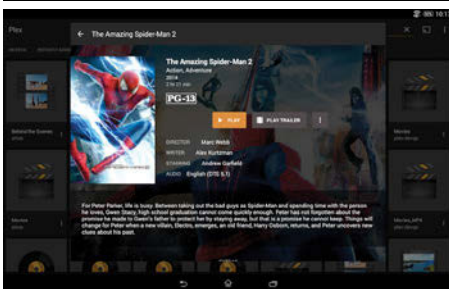
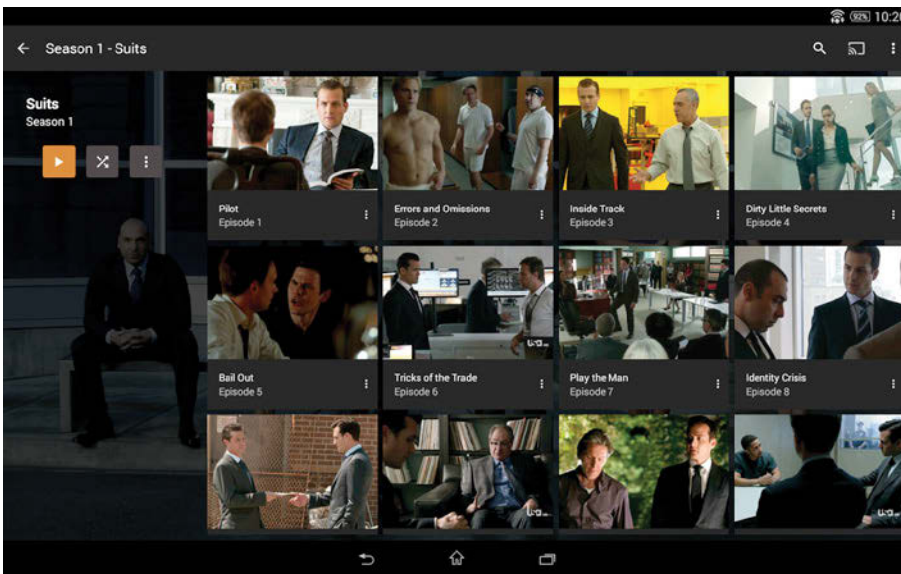
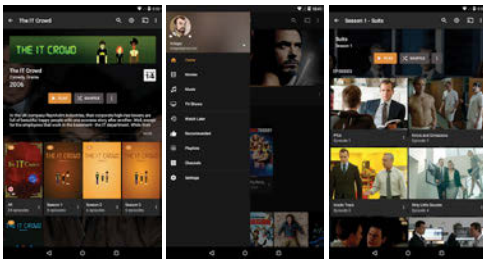
One of the most elegant and beautiful photo editing apps currently available for smart devices, VSCO Cam provides a suite of wonderful filters and editing options that are not only superior to the ones found in Instagram's app, but are guaranteed to make the average person's snapshots look more professional and artistic. Its minimalist interface lets users submit their pics to VSCO Cam's carefully curated photo grid, though only the best will make the cut. Thankfully, you can still share your photos directly to your social networks. And, VSCO Cam's Sync tool will automatically sync your photos across your devices. [SL]

[IOS, ANDROID]
GOOGLE PHOTOS
 THE BEST PHOTO BACKUP APP, WITH STORAGE FOR IMAGES AND VIDEOS.
 Free | tinyurl.com/oxcpv15

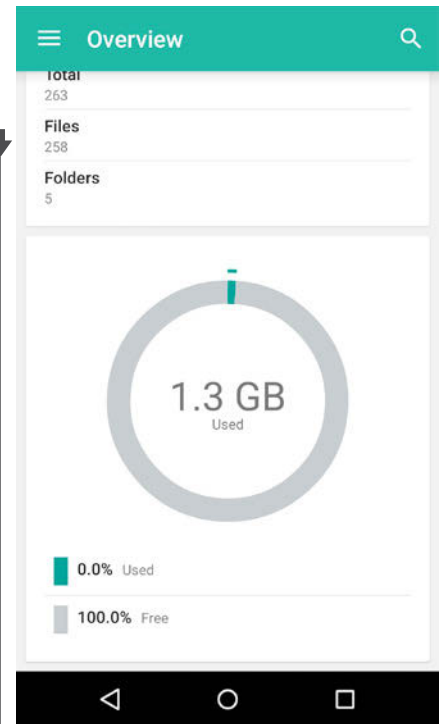
It's Google to the rescue once again, with another fantastic (and free) cloud-based service that gives users unlimited backup storage for their entire photo collection, so long as they don't mind reducing the quality of their images a little. If you don't like the sound of that, Google Photos offers 15GB of full resolution image storage, which sounds quite a lot smaller than 'unlimited', but is actually three times as much as Apple offers on its iCloud service. It'll also auto-tag and organise your library. Google Photos is a great option if you never want to worry about losing your precious pictures again. [SL]

[IOS, ANDROID]
SPOTIFY
 LOAN SONGS FROM A MASSIVE MUSIC LIBRARY.
 Free; Premium, \$11.99/m | spotify.com/au

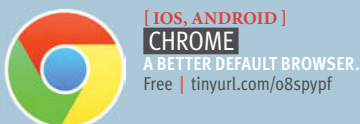
It might not be doing it quite as fast as the iPod, but there is no doubt that Spotify is significantly changing the way many of us listen to music. It's a subscription music streaming service that offers access to an entire world of tracks — and you can listen to them all for free. If you don't want to subscribe there are some limits: you'll have to put up with a random shuffle of songs from the album/playlist you select and there are ads. But the premium subscription is where the service shines, letting you listen to anything from Spotify's massive selection at any time, saving you from having to store tunes locally on your device. [JB]



Plex allows users to create a server on their computer that can be accessed from practically anywhere. Apps are available for iOS, Android and Windows Mobile devices, and you can also stream to Xbox 360, Xbox One, Playstation 3, Playstation 4, Ouya, Chromecast and more (you'll need a Plex Pass premium account in order to stream your content to game consoles). Perhaps the best thing about Plex though, is its interface. Content is presented with information and cover art, and show-specific themes pulled straight from the web. There's a reason why Plex is the world's most highly-regarded media streaming solution. [SL]



If you've ever had a web address or a note on your smartphone that you wanted to use on your computer (but didn't feel it was big enough to warrant an email or transferring it to a syncing, note-taking app like Evernote) then Pushbullet is for you. With an ingenious feature that'll sync the copy and paste clipboard across devices, whatever you pick up on your phone you can put down on your computer... straight away. It doesn't end there though; Pushbullet makes it simple to bat notes, links, photos and files back and forth between your devices, as well as keep running tabs of your phone's notifications on your PC screen. [JB]



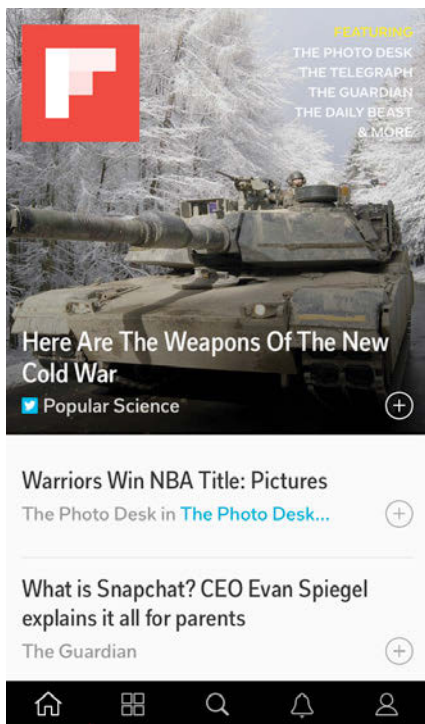
What if we were to tell you that you don't have to settle for your device's default browser? With many Android manufacturers opting for their own browser solutions, iOS devices opting for Safari and Windows Mobile devices using Internet Explorer, it stands to reason that a preferable browser would be one that carries your settings over across any device, regardless of which platform it's on. This is where Chrome shines brightest — login to your Google account and take your bookmarks, settings, history and other services everywhere you go. Google also updates Chrome regularly, so it's hard to beat in terms of security. [SL]



A study by NBNC recently claimed that a third of Aussie grandparents regularly use Skype, surely that makes this web video-calling app essential... doesn't it? Late last year Skype released a complementary app called Skype Translator (tinyurl.com/Tla40-SkypT) that lets you talk to someone who speaks another language, while the app translates in realtime. Though it's still in preview phase (and you need Windows to run it), this app literally breaks language barriers and is essential for mono-tongued techies like us. Were hoping that Skype Translator will be launched across mobile platforms soon. [JB]

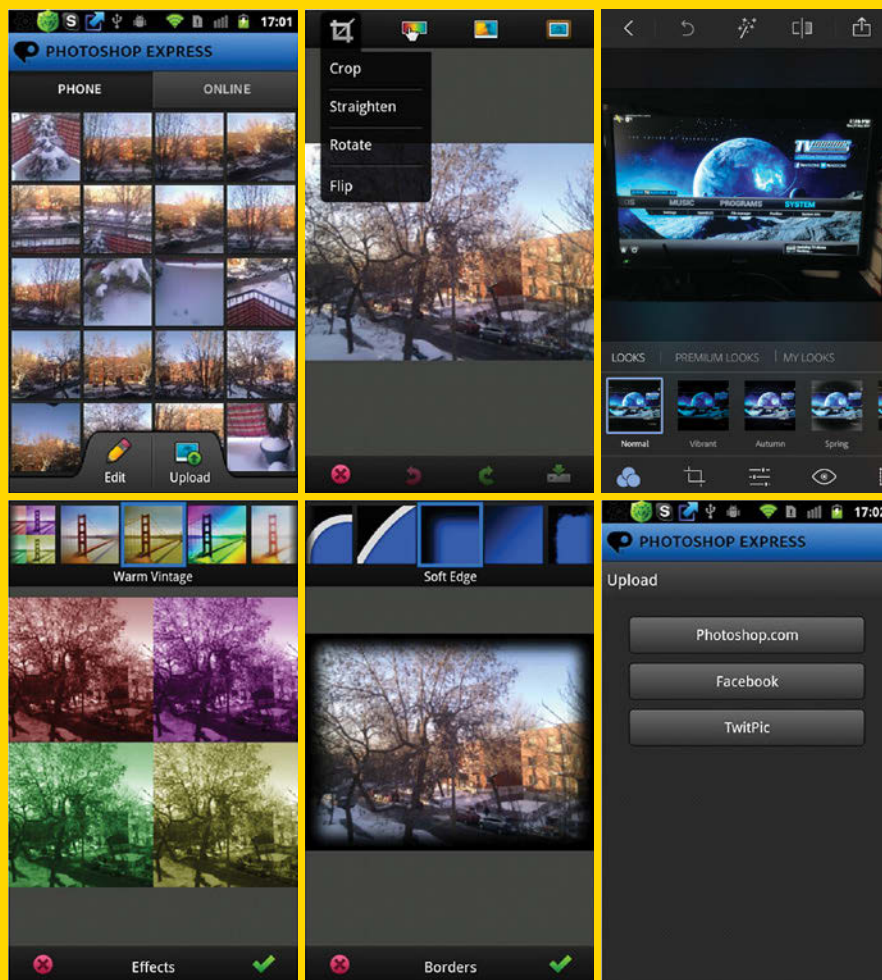


If you're into books, you'll probably be familiar with Amazon's Kindle, but if not, this cross-platform online library has one of the biggest collections of ebooks available. Kindle's iOS apps arguably look and feel better than iBooks (and trumping Apple on its own platform is no mean feat). Available on numerous smartphone OSs, Kindle allows you to seamlessly sync your book collection across all your devices so that you never have to wait to read your books again. This enormous slick online bookstore app is essential for anyone who reads ebooks. [JB]



[IOS, ANDROID]
Flipboard
 A SELF CURATED FLIPPABLE PINBOARD.
 Free | flipboard.com

Flipboard is a modern-day personalised social media magazine that plugs into all your social accounts and presents the most-relevant news in a slightly more visually-appealing way than your average RSS reader. Flipboard is great across its extensive range of compatible devices, but due to its beautiful design we definitely prefer it on the bigger tablet screens. With decent inbuilt categorised news feeds and the ability to create your own magazines from saved articles, Flipboard is a rewarding way to look at your favourite news on the web. [JB]



[IOS, ANDROID]
Adobe Photoshop Express
 EDIT YOUR PHOTOS ON THE FLY
 Free with IAP | photoshop.com/products/photoshopexpress

Available on the three main smartphone OSs, Adobe Photoshop Express is a pared-back version of the world's favourite photo editor for quick image editing. With a decent list of filters, cropping and colour tweaking abilities, the app offers all the features you'll need to edit your photos on the go. Plugging into a solid range of social media apps (so you can publish your tweaked photos straight away) and including 2GB of free online storage space, Adobe Photoshop Express is essential for anyone who uses their smartphone to take photos. [JB]

[IOS, ANDROID]
POCKET
 THAT THING WHERE YOU KEEP STUFF FOR LATER.
 Free with IAP | getpocket.com

Pocket is a web-clipping app that runs a slightly more streamlined ship than Evernote's 'do everything' approach. Pocket can basically 'clip' anything on the web (from videos to news articles) and then place it into a reading list that you can flick through later. It presents all your saved pages in a neat and appealing layout and can sync your reading list across devices. With a bunch of great features like night mode — saving your eyes from blue light in the evening — and a flexibility that allows you to use it as an intermediary reader between the web and your Evernote notebooks, Pocket is hard to fault. [JB]

[IOS, ANDROID]
EVERNOTE
 PERFECT FOR ALL YOUR NOTE-TAKING NEEDS
 Free | evernote.com

Primarily a service that allows users to store notes, clippings from the web, photos, audio clips and other digital files, Evernote takes things a step further by providing functionality as a writing app, a group collaboration tool and even a personal organiser. When used in conjunction with the Evernote Web Clipper browser extension, which lets you gather information and clip web pages in a single mouse click, and the user-friendly desktop version of Evernote, this is an invaluable productivity app with a beautiful interface. All you have to do now is find some cool stuff to clip for later. [SL]

[IOS, ANDROID]
VLC MEDIA PLAYER
 YOUR MASTER KEY FOR VIDEO PLAYBACK.
 Free | videolan.org/vlc

While music files are often MP3, MP4 or WAV formats which can generally be played universally, videos files come in many shapes and sizes and can get annoying when you're flicking between devices. This is less of a problem with VLC installed, as it plays almost any video format you can throw at it, making all the effort of transcoding video files for different devices unnecessary. If you're one to share and watch video files on your smartphone or tablet, VLC is an essential backup playback app that'll let you watch movies without having to worry what format it's in. [JB]

[ANDROID APPS]

Must-have Android apps

THE KEY APPS YOU NEED ON
YOUR ANDROID DEVICE.

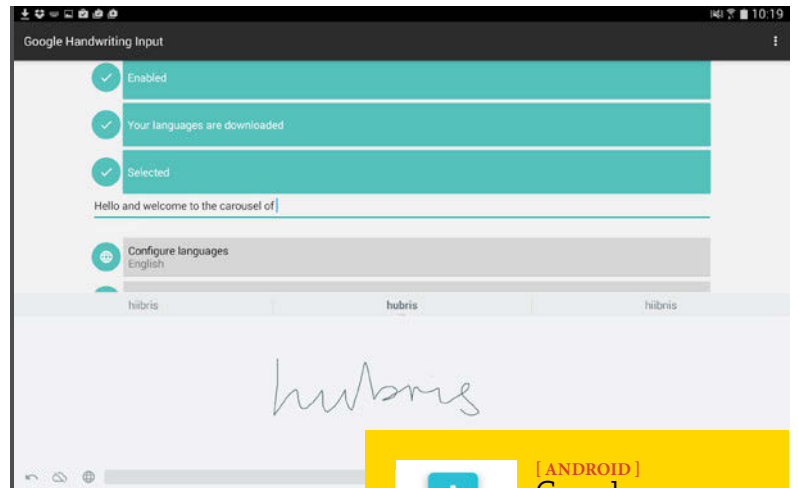
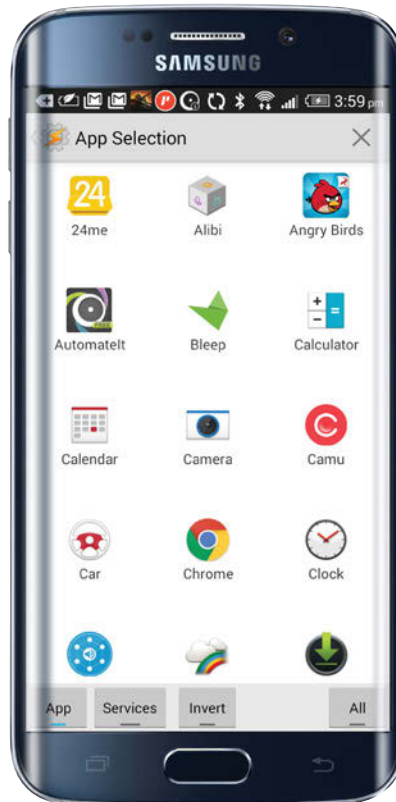
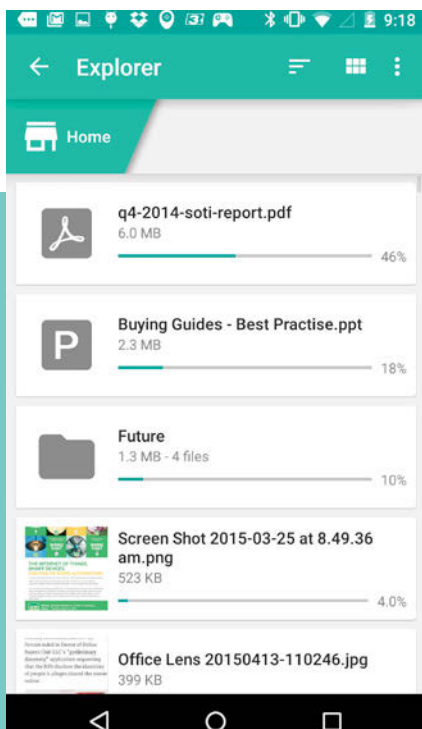
[JOEL BURGESS AND STEPHEN LAMBRECHTS]



[ANDROID]
Tasker

HAND-OFF TASKS TO YOUR
SMARTPHONE.
\$3.49 | TASKER.DINGLISCH.NET

Tasker is one of the older automation apps available on the Google platform but it's still number one. It has even more internally-facing features than the popular IFTTT. For example, you can set your phone to reduce power by dimming the backlight at a set time, or cut down on data consumption by automatically stopping apps from connecting to the web when your device is sleeping. Though there is a somewhat steep learning curve, a task is basically made up of actions (something your phone automatically performs) which are triggered when a profile of selected circumstances are met (ie. your phone is locked and it's after 12pm). Using these simple pieces, you can achieve an impressive level of complex automatic tasks. [JB]



[ANDROID]

**Google
Handwriting
Input**

NOW YOU CAN SCRIBBLE TEXT
AND DRAW EMOJI ON YOUR
ANDROID DEVICE.
FREE | TINYURL.COM/N5Z02ZK

If you hate using a touchscreen keyboard, you're in luck — Google Handwriting Input is here to let you scribble text and emoji on Android devices. The app allows you to use a fine point stylus, or even your fingers, to handwrite text (and even draw emoji) on any app that allows for text input. Even if your handwriting is messy, your words will likely be translated with great accuracy. Even if the primary word that comes up isn't what you were trying to write, it will surely be one of the two backup words on offer. [SL]

“IF YOU'RE AS RELIANT ON
YOUR SMARTPHONE AS WE
ARE, LOSING IT IS A BIG DEAL.”



[ANDROID]

UNCLOUDED

Free with IAP | tinyurl.com/TLA40-
UCloud

Whether it's using Dropbox to backup your photos or checking a work document through Google Drive, for many of us, cloud storage is an integral part of using our smartphones. But keeping an eye of how and where you're storing your documents, photos and videos can become a real chore. Unclouded is a central hub for all your cloud accounts, giving you a single spot where you can manage your data, even when you're offline. You can pay to add additional features (like a security pin and different themes) but the free version of Unclouded offers all you really need to keep your clouds from turning dark and foreboding. [JB]

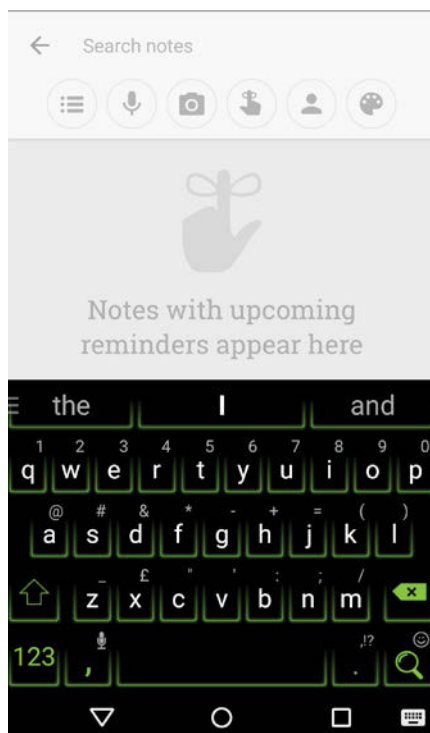


[ANDROID]

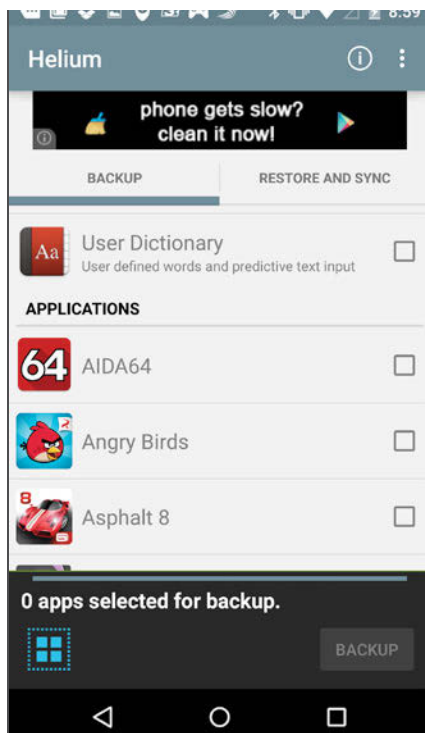
AIRDROID

Free | Pairs with Windows, Mac and
Chrome browser apps.

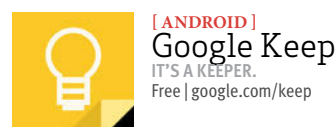
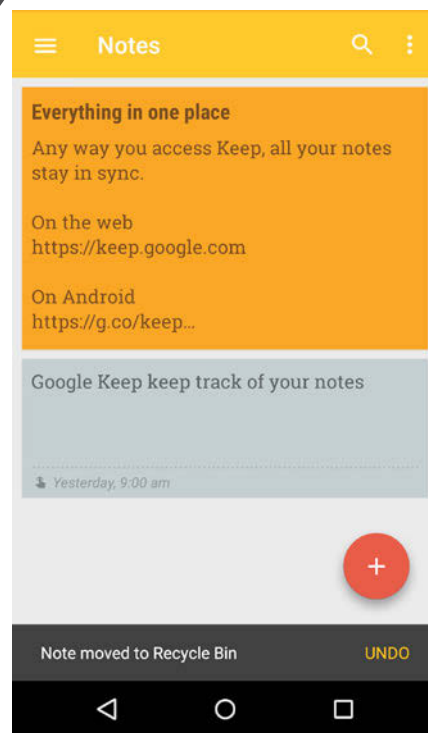
If you have a relatively new Android device, chances are you also have a computer or laptop you use regularly too. Within this multi-screened landscape it's nice to have each of your devices communicating with each other for when you need to flick something from one platform to another. There are many ways to skin that particular cat, but we reckon AirDroid is the best all rounder. Through a neatly designed interface you can pull files from your phone, get notifications and call and SMS from your computer screen. The latest desktop version (AirDroid 3) even lets you 'Air Mirror' your Android's current screen to your computer and control it from there. [JB]



Swipe typing takes a little getting used to and there is debate about which keyboard is better. Swype is simple and the free trial version is a competent keyboard that offers swiping that accurately predicts words. Whereas on a 2014 Motorola Moto X, Google's native keyboard prioritises emojis over the return key when typing an SMS, Swype's keyboard did away with it completely. In fairness, this glitch didn't occur on Samsung's Note 4... overall though, SwiftKey's interface transcended the hardware to consistently deliver more customisable features, a richer selection of social plug-ins, better stylized themes, faster swipe typing and less glitches. [JB]



Helium lets you backup app data and even the apps themselves to a cloud storage device like Google Drive or Dropbox directly from your Android, but you'll have to fork out for the premium version if you want to restore your phone directly from these backups. Technically, it's possible to pull files from Dropbox back down to your phone with the free version, but the one-off Helium licence makes it significantly simpler to completely restore your Android from a full backup. The premium version also lets you sync software and in-app info (like game progress) across multiple devices. [JB]



Yes... there's a multitude of note-taking apps all vying for a spot on your Android's home screen and if you're already entrenched in an app like Evernote, Google Keep doesn't offer quite the same versatility. That's not to say it isn't valuable, however. Google Keep is a straightforward note-taking app with a few extras thrown in like the capacity to store audio, photos and lists. But what makes Google Keep stand out is that it can sync your notes across devices using your Google account. And the ability to type notes on your phone and easily access them later on your computer is a luxury you quickly get used to. [JB]



[ANDROID]
ANDROID DEVICE MANAGER
Free | google.com.au/android/devicemanager

If you're as reliant on your smartphone as we are, losing it is a big deal. There are a few apps that help safeguard against losing your Android, but Android Device Manager makes this essentials list because it's the most simple way of doing it. Just download the app, log into your Google account, make sure your Android's location settings are turned on. Then, whenever you need to, you can use the web interface to see where your device is, set it to ring, lock it using a new password and even display a contact number. As a last resort, you can also wipe it so thieves can't get at your data — a pretty powerful option for something set up in under a minute. [JB]



[ANDROID]
GOOGLE OPINION REWARDS
Free | tinyurl.com/nqn43l8

Want to get rewarded with Google Play store credit just for speaking your mind? That's exactly what the Google Opinion Rewards app offers. By simply signing up and handing over a few details (which Google assures will remain anonymous), you will start receiving notifications to answer some short, in-app surveys (made up of multiple choice questions) from Google and a range of third parties. Each time you answer a survey, you'll be awarded credit (anywhere from \$0.20 to \$1, in our experience) which can be used to purchase anything you want, be that apps, games, movies, TV shows or ebooks. [SL]



[ANDROID]
ES FILE EXPLORER
Free | tinyurl.com/cd4u27q

One of the best reasons to own an Android device is the option to directly access all of your files whenever you want. ES File Explorer allows you to have all of your files and folders right at the tip of your fingers, just like on a desktop computer. Swipe around to navigate your folders and press and hold to drag an item around. You can also perform keyword searches on your entire phone, including SD cards. Bookmarks and apps can also be managed, and you can even unpack your ZIP archives and browse files and folders on an FTP server. [SL]

[IOS APPS]

Must-have iOS apps

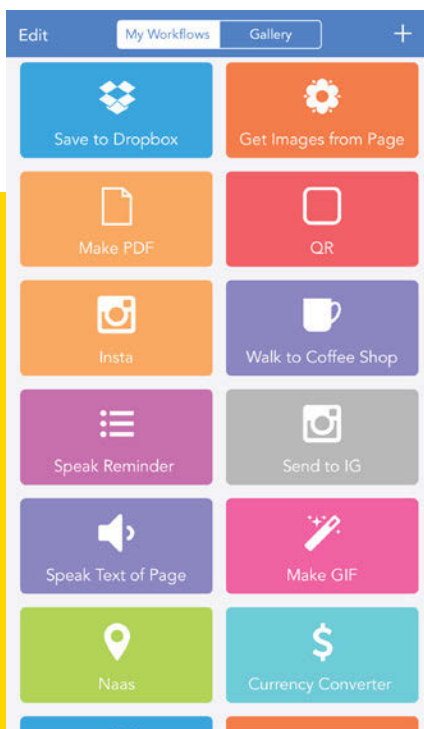
NO IOS DEVICE IS COMPLETE
WITHOUT THESE INTEGRAL APPS.

[STEPHEN LAMBRECHTS]



[IOS]
**Scannable by
Evernote**
GO PAPERLESS.
Free | tinyurl.com/o9k8lb9

By far the fastest and most convenient scanning solution available, Evernote's Scannable app lets users point their smartphone at a document and scan it in an instant. You don't even have to press a button — Scannable automatically detects the edges of your page and scans it when it has a good view. It doesn't just take a photo, either — Scannable detects your document's text and lines and recreates it into a clearer version. You can even scan business cards and turn them into rich contacts for LinkedIn or your phone's contact list. No iPhone should be without Scannable.



[IOS]
**Hyperlapse
from
Instagram**
INSTAGRAM'S IOS-EXCLUSIVE
TIME LAPSE APP
Free | tinyurl.com/o4crgpz

Want to make effort-free time lapse videos? Well you can put your GoPro away — Instagram's free app Hyperlapse has an interface simple enough for anybody to create smooth and speedy videos with a few taps of a screen. Hyperlapse presents the user with a full video screen and two buttons — a smaller one to switch to the front camera (dubbed Selfielapse) and a bigger button to start and stop recording. Once you've finished, simply choose the speed you want the video to run at (from 1x up to 12x). When you're ready, share your Hyperlapse video to Facebook, Instagram and more.

“A SET OF FEATURES THAT
GO BEYOND WHAT APPLE
AND ITS APPS CAN DO.”



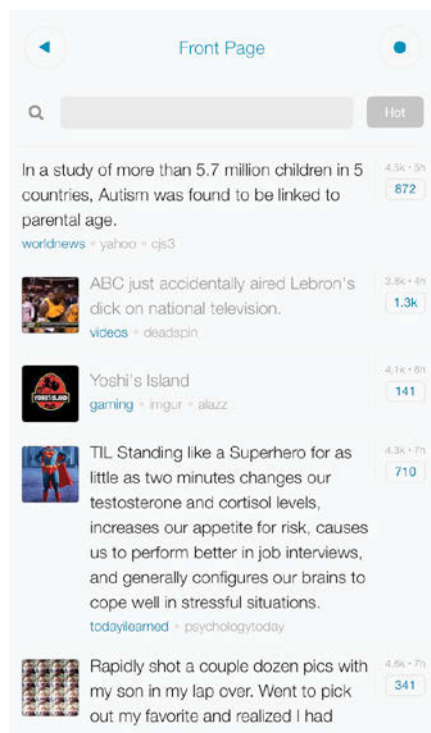
[IOS]
WORKFLOW
\$3.99 | workflow.is

With a set of features that go beyond what Apple and its apps can do on their own, Workflow provides users with a personal automation tool that lets you create your own workflows. Simply drag and drop your own series of actions (there are over 200 to choose from) to build workflows which you can then place on your iPhone or iPad's home screen as standalone apps. Workflows can be simple, or they can be quite advanced, allowing you to plug your creations into existing apps, like Safari, Dropbox or Evernote. The Workflow creation possibilities are truly endless.



[IOS]
GOOGLE MAPS
Free | <http://tinyurl.com/cqprfmu>

OK, so Google Maps isn't an iOS only app, but you're better off using this and pretending that Apple's own disastrous map solution doesn't exist. Google Maps simply kills it in terms of the accuracy of its data and its general user experience, including locations presented in an easy-to-follow list with added information, like opening times and star ratings from users. Google Maps also has exclusive features, such as Google Street View functionality, public transport filters and more. While the maps themselves lack Apple's level of polish, you can rest assured that they'll actually take you where you want to go.



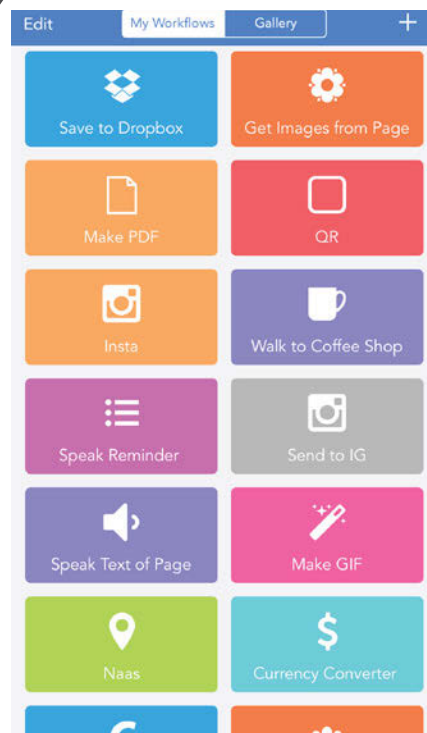
[IOS]
Alien Blue
THE BEST (AND OFFICIAL)
REDDIT APP
Free | alienblue.org

Keen Redditors know that there's only one iOS Reddit app worth using, and it just so happens to be official (though it wasn't at first — it's just that good). Alien Blue lets users navigate, read and contribute to subreddits in a clear and easy way — it may even be preferable to visiting the actual site in a browser window. Casual users can browse the front page, while others can login to access all of their registered subscriptions in an instant. You could literally spend the entire day getting into serious discussions, reading heartfelt stories, or even just looking at cat pictures.



[IOS]
Camera+
THE BEST CAMERA APP FOR
IPHONE AND IPAD
\$3.79 | campl.us

Sporting many more photo taking options than the iPhone's standard camera app, and with a faster response time, Camera+ is often considered the preferred app for taking photos on an iOS device. Camera+ comes with a smorgasbord of photography features, including in-depth photo editing tools, such as enhanced digital zoom, continuous flash, various shooting modes, exposure and focus control and much more. It also has a large range of attractive filters to visually spice up your happy snaps. Best of all, Clarity mode lets you instantly enhance your photos with a single tap of your screen.



[IOS]
Comic Zeal
AN ABSOLUTE MUST FOR
COMIC BOOK FANS
Free | tinyurl.com/o6b98v5

Without a doubt the best comic book reader app available for iOS, Comic Zeal can read pretty much any comic file type you throw at it. It also gives you a variety of ways to get your DRM-free digital comics on to your iPad — use a USB cable to transfer comics through iTunes, or go completely wireless, with options to import your funny pages from iCloud, Dropbox and Google Drive. Comic Zeal will automatically sort your comics into folders, but if you want to sort your collection manually, you can apply your own tags. A must for all comic book aficionados.



[IOS]
REEDER 2
\$6.49 | reederapp.com/ios

Built around the iOS user-interface to feel like a natural extension of the platform, the original Reeder app quickly became one of the most beloved RSS reader solutions for iDevices. But when Google dismantled its RSS service, Reader, which was based on Google Reader's API, became useless. Thankfully, developer Silvio Rizzi delivered an outstanding follow-up in Reeder 2, a lean and user-friendly RSS experience which retains the original app's functionality while simultaneously expanding on it. Swipe gestures allow you to easily navigate through several pages, and simplified sharing options also impress.



[IOS]
TWEETBOT 3
\$6.49 | tapbots.com/tweetbot

With so many Twitter clients to choose from on the iOS App Store, it's tough to know which one does the best job. With great free options like the official Twitter app and Twitterific available, you'd hope that a pricey paid-app like Tweetbot 3 deliver the goods when it comes to improving your Twitter experience — thankfully, it totally does. With a range of great features, such as background content fetching, media-only timelines, a customisable tab bar, timeline syncing across devices, live tweet streaming over Wi-Fi and more, Tweetbot 3 makes browsing and composing tweets better than ever before.



[IOS]
PAPER BY FIFTYTHREE
Free | tinyurl.com/o6b98v5

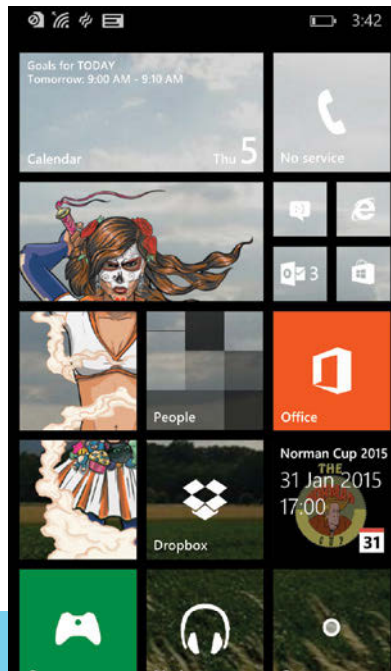
A beautifully-designed art creation app, Paper by FiftyThree has the power to give even the least artistic person the ability to create a masterpiece in minutes. Drag your finger around your screen to produce elegant brushstrokes, and then fill your drawings in with a range of tools (which must be purchased separately), including pencil shaders, fine line pens, watercolour pens and even a paint roller. If you make a mistake, simply place two fingers on the screen and make anti-clockwise motions to go back in time. You can also purchase the Pencil by FiftyThree to take your art to the next level. ■

[WINDOWS PHONE APPS]

Must-haves for Windows Phone

THE ESSENTIALS FOR FANS OF MICROSOFT'S SMARTPHONE OS.

[JOEL BURGESS]

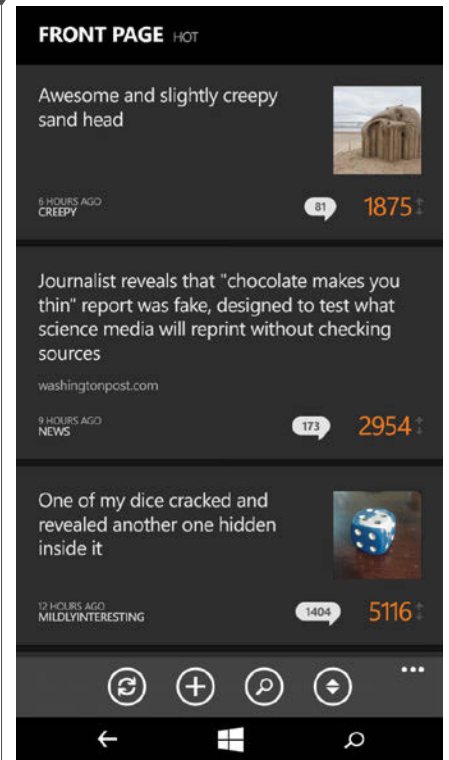
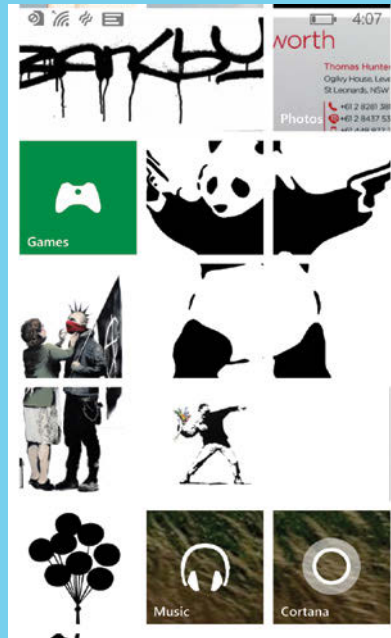


[WINDOWS PHONE]

#TileArt

WE WOULD TURN FOR TILEART
Free | tinyurl.com/TLA40-TileA

If you haven't yet had the opportunity to use TileArt then you're missing out on one of the great few perks that the Windows Phone platform has over Android and iOS. The default smartphone 'long list of apps' interface isn't really all that visually appealing — and even a regularly updated background image on iOS will eventually look boring. And though, for the most part, Microsoft's WP8 tile system falls into the same trap, with #TileArt you can transform your home screen into a personalized, functional mosaic artwork. There are a few example galleries included to get you started, but for the most part it's BYO inspiration. Once you've got the hang of it, all you'll be left wanting is a bigger screen.



[WINDOWS PHONE]

Readit

THE BEST REDDIT CLIENT FOR WP.
Free | tinyurl.com/TLA40-Readi

There are no shortage of Reddit clients for Windows Phone and though — much to our dismay — Readit isn't the prettiest version out there, even Reddit itself calls this app the most feature-rich client on the platform. Letting you do everything from pin shortcuts to your favourite subreddits on the home screen, to looking at images directly in the feed (thanks to Imgur integration) Readit is a good basic Reddit client. With a full inbox system, decent sharing capabilities and an impressively long list of customisable settings, it makes the essentials list for anyone fond of the popular site.



[WINDOWS PHONE]

MICROSOFT OFFICE LENS

\$3.99 | tinyurl.com/TLA40-OLens

Part of the Microsoft Office suite, Office Lens is a productivity application. Turning your smartphone into a portable scanner, this app uses your camera to snap documents, business cards and written notes and then straightens, flattens and crops them automatically into readable notes. Integrating with OneNote, Office Lens can even use inbuilt optical character recognition to turn scanned documents directly into editable Word files. That integrated business card reader can also pulls contact info directly from cards and saves them to your phone, making Office Lens one of the essential Windows Phone productivity apps.

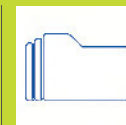


[WINDOWS PHONE]

HERE MAPS

Free | tinyurl.com/TLA40-HMaps

This map application may still be outpaced by Google's behemoth Google Maps, but the Nokia-developed nav tool is actually more accurate than Apple's crack at modern orienteering. Here Maps differentiates itself by offering easy-to-download offline maps for when you need directions in locations beyond cell reception, and, like Google, the app plugs into transit info for when you need directions using a public transport system. LiveSight, one of Here Maps' newer features, is an augmented-reality app that integrates your phone's camera with a floating expandable map. It lines up with what you're looking at and will place tags on the real-world locations that you can see.



[WINDOWS PHONE]

APP FOLDER

Free | tinyurl.com/TLA40-AppFo

Once you start to rack up a few apps on your Windows Phone, scrolling through the alphabetical list to find the app you're looking for can be harder than eating soup with a knife. The aptly titled App Folder lets you collect apps into categorised folders and pin those folders to the start screen. It doesn't organise the apps within the apps list, but with a little organisation you can put all the apps you want on your home screen in a functional way, making it much faster to access them when you want to. There aren't any additional features, but it's the kind of app you'll use every day. ■

AUSTRALIAN T3

iPad edition



NEW ISSUE
ON SALE NOW



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HELP STATION

GET THE MOST FROM YOUR TECH

[THIS MONTH IN HELP STATION]

82

Q&A

[YOUR QUESTIONS ANSWERED]

84

Mac

[MAINTAIN YOUR MAC WITH ONYX]

86

Android

[CONSUME PODCASTS LIKE A BOSS]

88

Download & stream

[DIY NETWORK MEDIA PLAYER]

90

Security & privacy

[HARDENING YOUR VPN]

92

Home networking

[TURN A ROUTER INTO A WIRELESS RANGE EXTENDER]

94

Windows

[ORGANISE YOUR PC DESKTOP]

97

iOS

[MANAGE IOS FILES WITH DOCUMENTS]

98

iOS

[CONTROL IOS LOCATION SHARING]

99

Photography

[CORE PHOTOGRAPHY SKILLS: WHITE BALANCE]

102

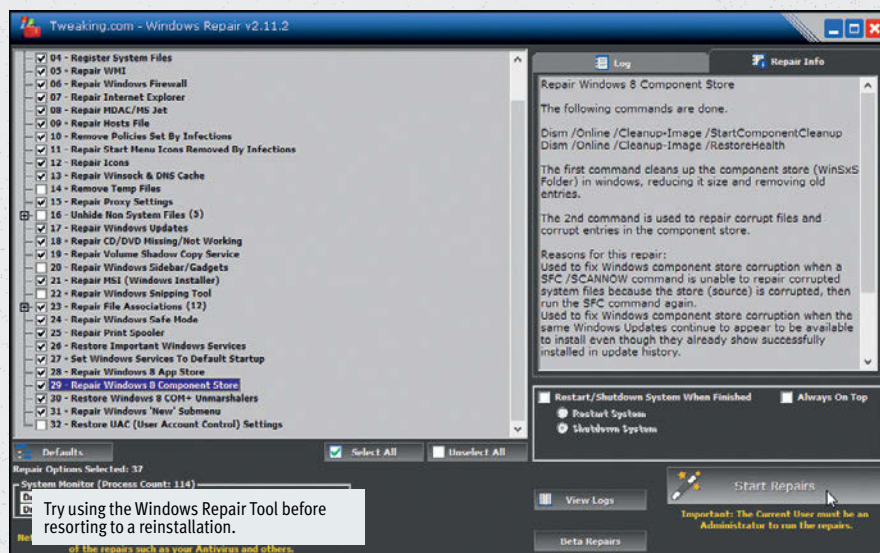
Home AV

[WHAT IS SPEAKER BURN IN?]

106

Tech frontiers

[MAKING A \$9 COMPUTER]



[HARDWARE]

Printer suddenly stopped working

I went to print out some competition entries for my photo society's third print competition using Photoshop, but am now unable to print anything to my Canon PIXMA Pro9000 Mark II printer. I've checked the print spooler, which isn't running, and the print spooler folder is empty too. I've tried many things with no success — do you have any extra ideas?

[THERESA MCHUGH]

Nick Peers replies: Theresa had recently applied a Windows Update for the PIXMA Pro9000 printer, which is when the problem had started. This indicated a possible driver issue — rather than attempt to roll back the driver (which would only lead to Windows Update prompting her to reinstall it later), we instructed Theresa to remove the driver completely — first, check to see if there's an entry in the Program and Features Control Panel, and uninstall it from there. Next, open 'Devices and Printers' and verify the printer

is no longer listed — if it is, right-click it and choose 'Remove device', then restart your PC. Finally, go to the manufacturer's web site — in Theresa's case, a printer driver (version 2.75) is available for the PIXMA Pro9000 Mark II printer over at www.canon.com.au. Download and install this. Theresa then reported the printer started working correctly again — she also ran a fresh scan with Windows Update and the original, troublesome update no longer appeared (we suspect that's because this is an older version than the one hosted on Canon's own site).



[WINDOWS]

Error 1610 woe

I purchased a Dell Inspiron in October last year, which is running Windows 8.1. I've started getting error 1610 messages when attempting to install Samsung Kies 3 for backing up my mobile phone. I also get a few errors, such as 'The instruction at 0x5ca12fe3 referenced memory at 0x5ca12fe3. The memory could not be read.' Can you help?

[MICK SAUNDERS]

Nick Odantzis replies: Mick had already tried a repair install and System Restore without any success, and eventually reverted to factory settings, which has appeared to fix the problem. Error 1610 messages are notoriously difficult to track down and troubleshoot, but there are some steps you can try before taking this drastic step. First, delete the program installer and download a fresh copy from the internet in case it was corrupt. Also run full security scans of your PC, including one with Malwarebytes Anti-Malware. Next, we'd suggest downloading and using the

When hardware compatibility problems arise, try the latest manufacturer drivers rather than Windows Update.



A few command-line tricks can restore USB drive auto-mounting in Windows 8.1.



Windows Repair tool (tinyurl.com/tla40-winrep) in case the basic tests or default repairs are able to clear the problem. It's also worth checking out the error messages too, which can be traced to faulty memory — run the Windows Memory Diagnostic tool from Windows to verify there's nothing wrong here.

[HARDWARE]

External hard drives don't mount automatically

When I plug in a new USB hard drive to my Windows 8.1 PC, I'll hear the USB ping to indicate it's been recognised, but it doesn't show up in Windows Explorer unless I manually allocate it a drive letter. As you can imagine this is a real pain. Do you know if there's a simple solution for this?

[RON SCOTT]

Matt Hanson replies: Ron actually came up with the answer to his own query a few months after we'd originally made some suggestions. First,

press Windows key-Q, then type `cmd` into the Search box. Right-click the Command Prompt entry and choose 'Run as administrator' to open the command prompt window. Next, type `diskpart` and press Enter to launch the Diskpart tool. Finally, type `automount enable` and press Enter — this simple command will ensure that USB hard drives will be recognised the moment they're plugged in.



[WINDOWS]

Desktop is resizing

My Windows 7 PC has started shrinking the size of the desktop — so much so that most programs refuse to run. It occurs when the computer has been left idle for a while, and forces me to reboot to (temporarily) resolve it. I've tried getting help from Microsoft, with no success. Can you assist?

[DAN EVANS]

Graham Barlow replies: This behaviour can be caused by all kinds of problems: faulty drivers (Dan's checked out), a hardware problem or



Blurry images on third-party screens can be tricky to troubleshoot.

possibly a third-party program malfunctioning. We next pointed Dan to what we thought would be a temporary workaround for each time the problem occurred — after the desktop resizes, simply right-click it and choose 'Screen resolution'. From here we asked Dan if he was able to push the slider back up to the maximum supported figure — if so, clicking 'Apply' would restore the desktop to its proper size without Dan having to reboot each time. What we thought was a short-term fix turned out to be a permanent one — having resized the desktop in this way once, Dan reported back a week later that the problem had apparently resolved itself. Sometimes the simplest solutions really are the ones that work!

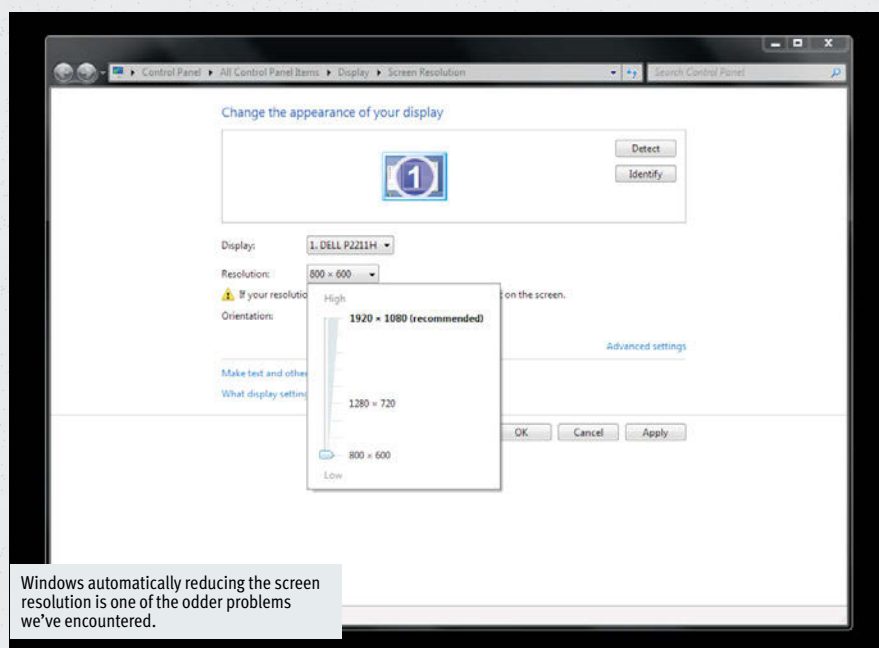


[MAC]

Blurry text on some monitors

I've just switched from an iMac to a Mac mini as a cheaper upgrade. A big part of the savings was the ability to use a cheaper monitor — a 27-inch Samsung LCD. However, the text is blurry and no changes in System Preferences seem to help. I have tried the monitor on a PC and it looks fine. [GRAHAM LEWIS]

Luis Villazon replies: There are lots of reasons why you might get a blurry image. The two most common are that the monitor is over- or under-scanning (there'll be an option for this in the monitor's own menu) and font smoothing (try typing `defaults -currentHost write -globalDomain AppleFontSmoothing -int 2` in Terminal, then log out and back in). There's another possibility. Apple's DisplayPort uses the YCbCr colour encoding scheme by default, and this can look weird on some monitors. You can fix it by running a script to convince OS X the monitor only supports RGB. Download the script at embdev.net/attachment/168316/patch-edid.rb and type `ruby patch-edid.rb` in Terminal. This creates a folder in your home folder. Move this into `/System/Library/Displays/Overrides` and restart. ■



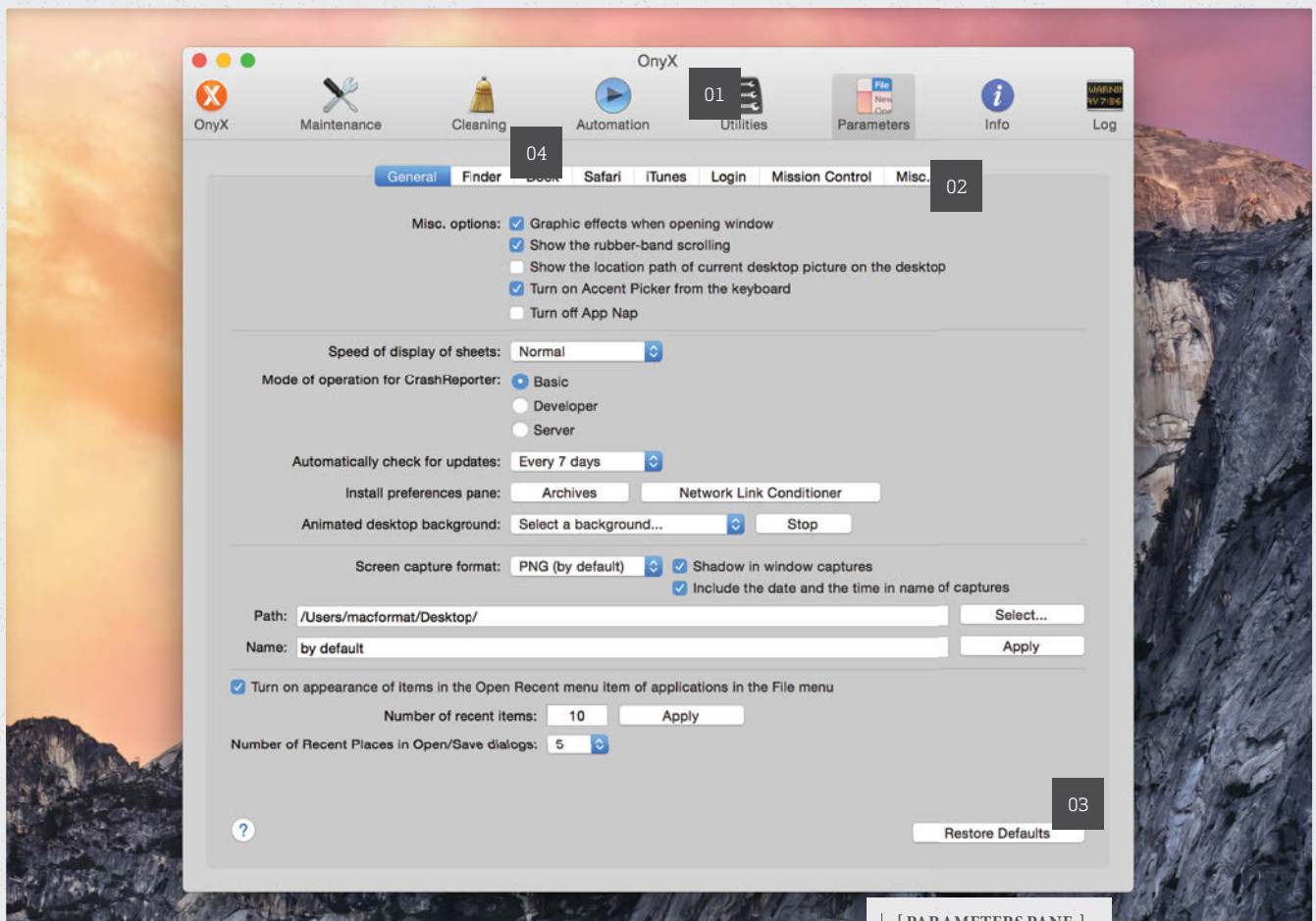
Windows automatically reducing the screen resolution is one of the odder problems we've encountered.

[CREATE]

Maintain your Mac with OnyX

ACCESS HIDDEN FEATURES OF OS X, MAINTAIN AND CLEAN YOUR MACHINE

[KENNY HEMPHILL]



[PARAMETERS PANE]

THINK OF ONYX as a Swiss Army knife for your Mac. It incorporates a number of tools which allow you to carry out maintenance and cleaning, verify your startup disk and file structure, and access hidden parameters so you can customise how the OS and many of its included applications work. OnyX incorporates two other tools from the company, Maintenance and Deeper, so if you use OnyX, you won't need these. If you only want customisation options, and find the interface of OnyX intimidating, Deeper is more straightforward.

The good news is that all three applications are free to download and use. The bad news is that documentation and support is very limited. That's where we come in. Over the next couple of pages, we'll show how you can use OnyX to make sure your Mac runs smoothly all the time and that you have it set up just the way you want it.

A word of warning: OnyX can't destroy your system, but things you do with it may produce unexpected results, including moving or deleting files. Back up first!

“ONYX INCORPORATES TWO OTHER TOOLS FROM THE COMPANY, MAINTENANCE AND DEEPER, SO IF YOU USE ONYX, YOU WON'T NEED THESE.”

DOWNLOAD

To complete this tutorial, download OnyX from www.titanium.free.fr/onyx.html

01

THE MENU BAR

The menu bar is split by type of job. The customisation functions are all in Parameters.

02

TABBED SECTIONS

Each group is further divided into tabbed sections. Tabs denote the application or OS function being customised. The number of options in each section varies widely.

03

RESTORE DEFAULTS

The Restore Defaults button is your friend. If your Mac starts to behave unexpectedly, press it to put things back the way they were and problems should hopefully disappear.

04

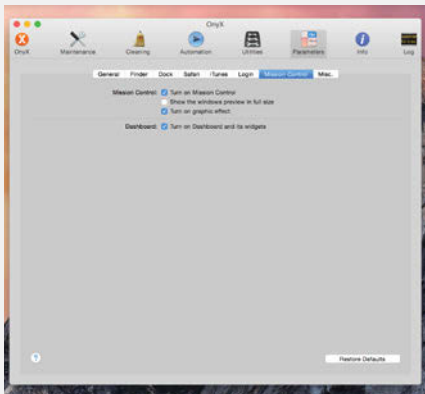
FINDER REBOOT?

Depending on what you ask it to do, OnyX will either make any changes immediately, need to restart Finder, or even take over your Mac for a few minutes.

[STEP BY STEP]

THE BEST WAYS TO USE ONYX

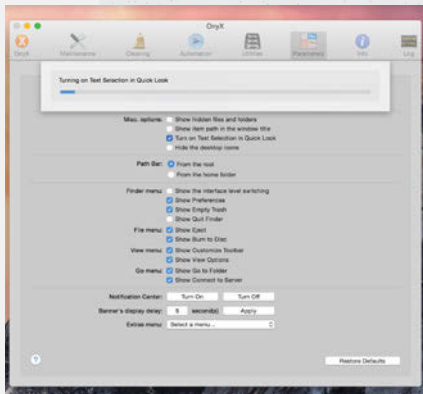
Follow this handy guide to get the most out of OnyX.



01

DASHBOARD

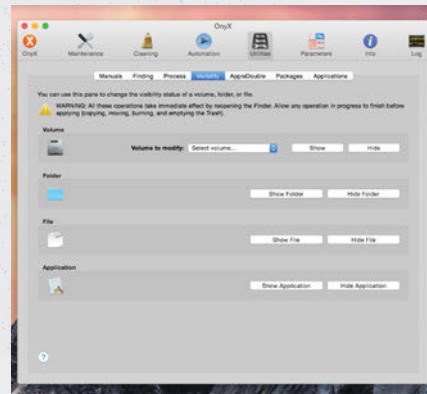
Remember Dashboard and its widgets? It's still here, but it's switched off by default. To switch it back on, click Parameters, then the Mission Control tab. Now click on the box next to Dashboard. Click Continue; OnyX restarts the dock.



02

QUICK TEXT SELECTION

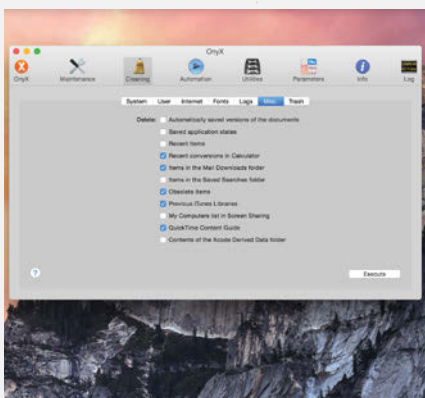
Want to select text directly when performing a Quick Look on a text file? Go to Parameters, then Finder and look down the list for 'Misc. Options.' Check the 'Turn on Text Selection in Quick Look' box.



03

HIDE ANY FOLDER/FILE

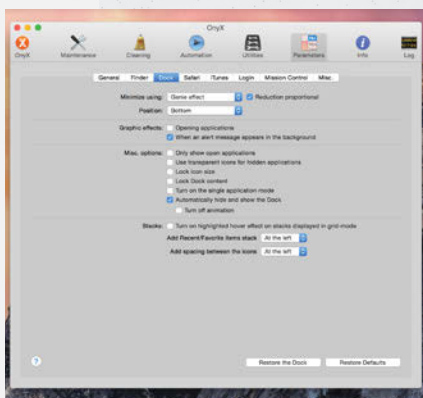
If you share your Mac, you may want to hide a file or folder from view. Go to Utilities and click the Visibility tab. Now click 'Hide File' or 'Hide Folder,' then Continue, then select the file or folder. You can always make them visible again.



04

DELETE ATTACHMENTS

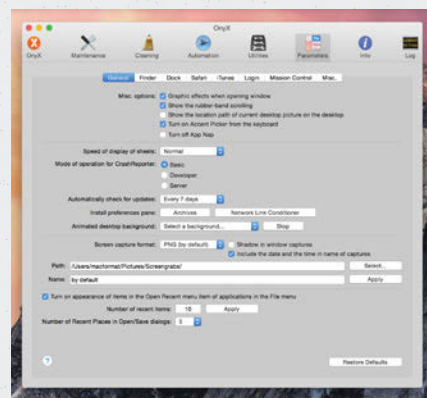
The Mail Downloads folder can fill up with attachments and take up disk space. To empty it, click Cleaning, then the Misc tab. Check the box next to 'Items in the Mail Downloads' folder. Now click Execute.



05

STOP ICONS BOUNCING

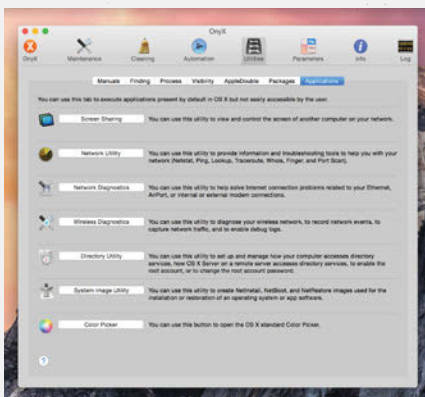
Do you hate the way icons bounce up and down in the dock when you launch an application? Stop their needy dances by going to Parameters, then Dock. Uncheck the box in the Graphic Effects section, next to 'Opening applications.'



06

SCREEN CAPTURES

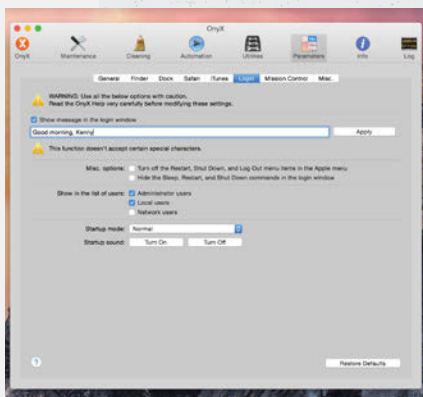
Taking a screengrab results in a PNG file, named 'Screen Shot...' appended with the date and time. You can change all of that in Parameters. Go to the General tab, then the Screen Capture section, and choose the options you want.



07

FIND ELUSIVE UTILITIES

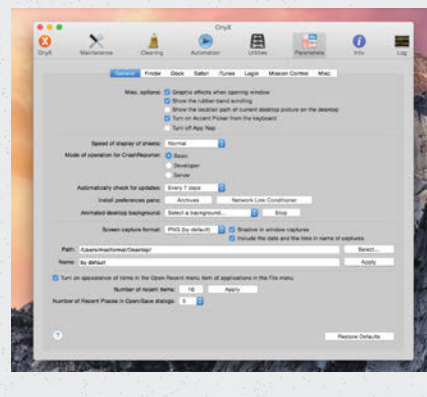
OS X has lots of Mac maintenance tools, but they're tucked out of view. Click 'Utilities > Applications' to show them. Only use Directory Utility and System Image Utility if you know what you're doing.



08

SHOW LOGIN MESSAGE

Set a message to display when you log in to your Mac. In Parameters, click the Login tab. Check the 'Show message in the login window' box and write your message in the box (keep it clean!). Click Apply.



APPROACH WITH CAUTION

There are so many options available in OnyX that you'll either be tempted to click around randomly and see what happens, or be too terrified to touch anything at all. We think the best approach is somewhere in between — exercise some caution initially and try to gain a good idea of what something does.

[ANDROID]

Listening to podcasts on Android

ONCE YOU UNDERSTAND ITS INTERFACE, ANDROID APP BEYONDPD OFFERS MANY POWERFUL AND USEFUL FEATURES.

[SIMON CHESTER]

MY RECENT ADDICTION to podcasting began when I found the powerful podcast 'catcher' app, BeyondPod, and its ability to play me an interesting, pseudo-random blend of the best of my subscriptions, straight from my homescreen. This is possible through its combo of per-feed rules-based downloads, and its 'SmartPlay' dynamic playlists.

BeyondPod contains some truly useful downloading features, too: you can set a scheduled time for it to update all your feeds and download a specified number of episodes. Furthermore, it also offers a host of useful playback features, including: on-the-fly playlists; Chromecast playback; Google Wear controls; car mode; homescreen widgets; and more. When set up correctly, it's the best podcast catcher on Android.

WHERE TO START?

Before we set it up, though, the first thing to consider is if you want the free 'lite' or paid 'pro'

version (\$8.99). The lite version has most of the features of the pro version with the following exceptions: you can only update one feed — or download one episode — at a time; you can't use custom playback speeds; and Chromecast support, scheduled updates, and syncing episode progress between devices are all disabled. Handily, settings are preserved after an upgrade, so you might as well start with the free version.

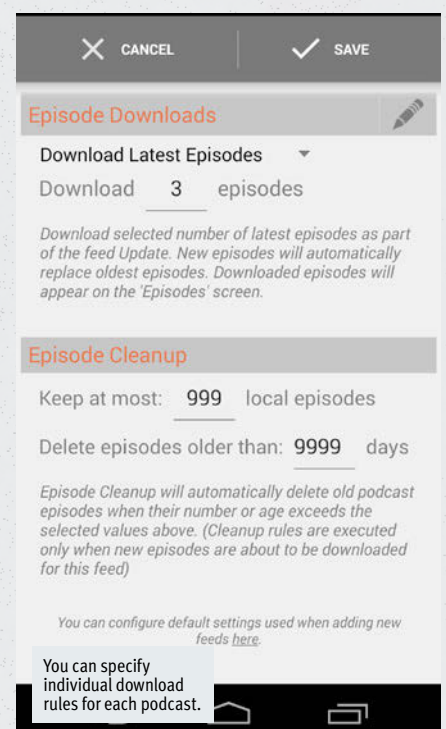
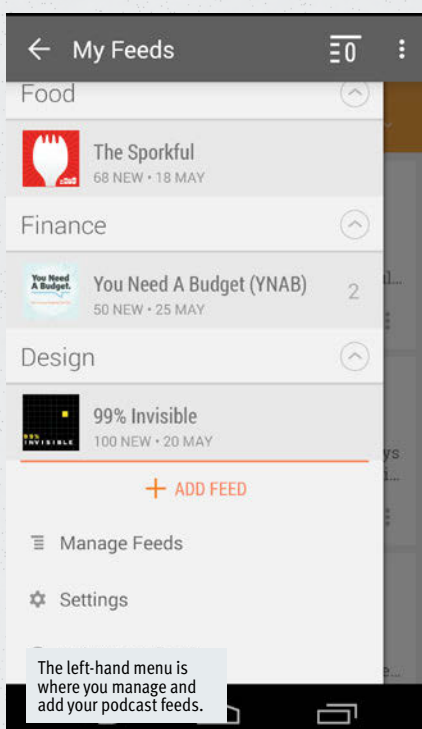
BeyondPod's layout consists of a left-hand menu containing your podcasts arranged by category, and a right-hand menu where your current playlist (as well as your dynamic 'SmartPlay' playlists) is shown.

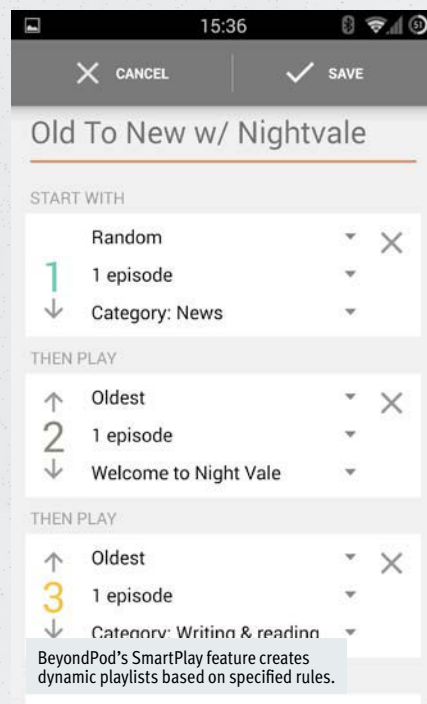
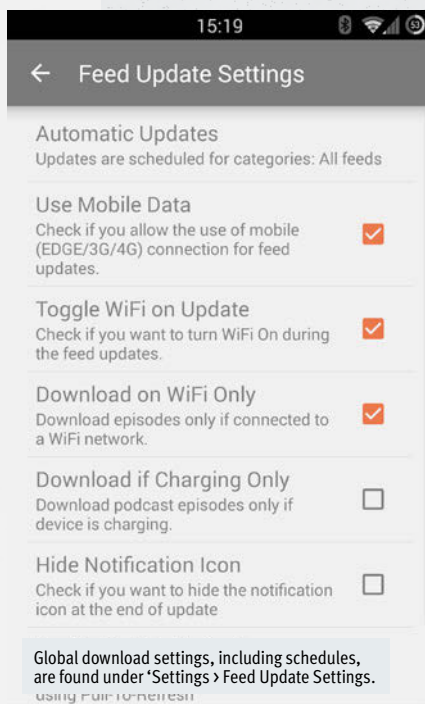
TIPS N TRICKS

Looking to perform some other neat tricks? The developer of BeyondPod has set up a little guide at www.beyondpod.com/cms/index.php/beyondpod-tips-and-tricks.



“BEYONDPD CONTAINS SOME TRULY USEFUL DOWNLOADING FEATURES.”





First things first, though: let's add some podcast feeds.

ADDING OR IMPORTING FEEDS

If you're coming from an existing podcast app — even one on your computer — you can import all your feeds; you just need to look for an 'export to OPML' option in your existing app, then copy that file to the BeyondPod folder on your phone. You import said file into BeyondPod by visiting the left-hand menu, pressing the '+ ADD FEED' button, then the import icon (a rectangle with an arrow), followed by 'Import OPML File'. If you don't see your OPML file listed, confirm that it was copied to the folder shown.

Have a look around the '+ ADD FEED' page now to browse or search the catalogue for interesting podcasts. If you can't find a particular podcast in there, you can add in the feed's URL by pressing the import icon up the top right, and then choose 'Enter Feed Address'.

When you press the Subscribe button on a podcast, you'll be asked to choose up to two categories for it. Categories are used for bulk update/download actions, as well as for use in creating 'SmartPlay' playlists.

UPDATING AND EDITING FEEDS

Once you've added some feeds, you're able to set 'update' and 'download' rules to allow you to consume them in the best possible way. To 'update' a feed is to find the latest episodes available from it. By default, feeds will automatically download the latest episode when they are updated. To change this behaviour, visit the Settings menu (down the bottom of the left-hand menu), then 'General Settings > Feed Defaults'.

To set up a schedule for updating your feeds

and downloading episodes (Pro version only), go to 'Settings > Feed Update Settings > Automatic Updates'. To save space on your device, you may want to set the option to automatically delete episodes after you have listened to them. To do this, visit 'Settings > Playlist Settings > After Playing > Delete and play next' (or whatever takes your fancy).

To change update and download rules for an individual feed, long-press the feed name in the left-hand menu, and choose 'Edit Feed > Episode Downloads'. This is also where you set the download order of episodes — that is 'In-Order' (oldest to newest, e.g. for serials), or 'Latest Episodes' (newest to oldest, e.g. for current affairs) — as well as how many to download at a time, and the 'Episode Cleanup' options, which specify the maximum number or age of un-played episodes to keep (really handy for deleting out-dated news podcasts that you didn't listen to).

Below this is the 'Advanced Settings' section, where you can tweak options such as the name of the feed, its order, its image, and more, including if episodes should be automatically deleted or not (I like to keep music podcasts for repeat listening), and if episodes should pick up where you left off, or always start from the beginning.

Once a feed has been updated, you are then able to pick an episode to listen to — those

ready to go now are held under the 'My episodes' view, while those yet to be downloaded are under the 'All Published' view. To toggle between the two, just press the feed name up the top of the screen.

You can start listening to an episode by pressing the play icon, enqueue one by pressing the stripy 'add to playlist' icon, or manually download one (outside of a scheduled update) by pressing the download icon.

SMARTPLAY

The other feature of BeyondPod that has me swooning is its SmartPlay option, which allows you to create on-the-fly playlists based on a set of rules. To create a new SmartPlay, click on the playlist icon up the top right of the main screen, then the '+ ADD SMARTPLAY' button. After choosing a name, you then need to create its rules. Each rule states how many episodes to add to the playlist, as well as from which feed or category, and if they should be the newest, the oldest, or a random selection.

You can start any of your SmartPlays by visiting the playlist menu on the right hand side of the screen. Alternatively, you can add shortcuts to your homescreen by pressing the three-dot menu next to the SmartPlay name, then choosing 'Add to Home Screen'.

Now all that's left for you to do is connect your headphones and get listenin'. ■

TASKER AND 3RD PARTY APP INTEGRATION

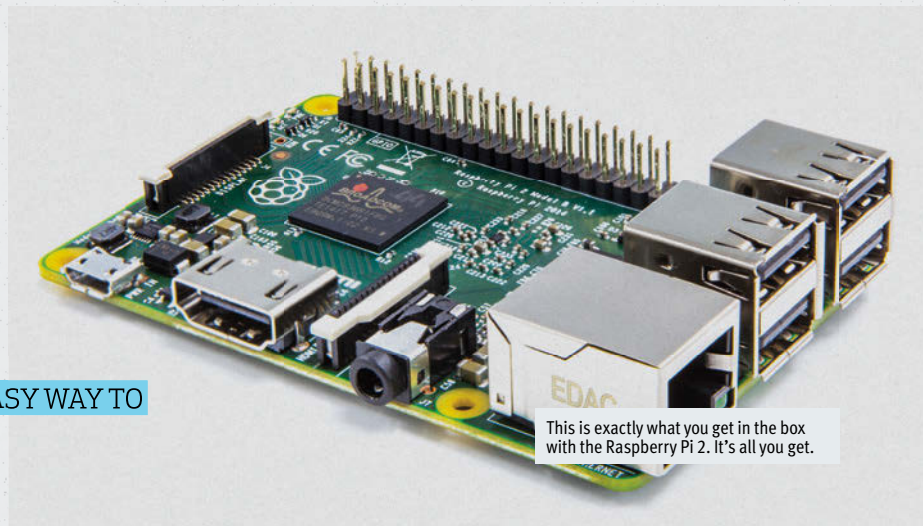
If you're looking to take BeyondPod to the next level — say, by choosing a SmartPlay based on the day of the week — you'll be chuffed to know that it supports integration with Tasker. To learn how, visit tasker.dinglich.net/. Note that, in your 'Send Intent' Action, you need to specify the SmartPlay name in the 'Extra' section as "smartplay:NAME" where NAME is the case-sensitive name you gave your SmartPlay.

[DOWNLOADS & STREAMING]

DIY network media player

A RASPBERRY PI 2 IS A CHEAP AND EASY WAY TO BUILD A POWERFUL MEDIA PLAYER.

[NATHAN TAYLOR]



THE LAUNCH OF the original Raspberry Pi was a bit of a phenomenon. It was a super-cheap computer board that could be used to build a variety of devices. It could also be used to build a network media player, but it was sluggish and not really great for the task.

The Raspberry Pi 2 has changed that. You can now build your own network media player for less than \$100 that's every bit as capable (if not more so) than many commercial network media players. With the new processor in the Pi 2 it's perfectly snappy and absolutely capable of 1080p media playback.

To go along with the board, we have a new OS to run on it: OSMC (osmc.tv). OSMC is essentially a cut down version of Debian Linux running Kodi as the interface. Kodi, if you're not aware, is the app formerly known as XBMC, is quite likely the best free network media player app there is. It has incredible support for formats, devices and protocols, a plug-in architecture and it's easy to use.

WHAT YOU'LL NEED

To build your own network media player you'll need a few things. The Raspberry Pi 2 is available from a number of stores, usually for about \$50. That only gets you the naked board, however; you don't even get a power cable in the box. So you'll need a few extra things to make it work:

- * A Raspberry Pi case (typically \$10-\$25).
 - * A Micro SD card (8GB or larger), preferably class 10 speed (\$10-\$15).
 - * A micro USB cable (the same type used for charging mobile phones), which will be used for power. (\$2 - \$3).
 - * A standard HDMI cable.
 - * An SD card reader for your PC. Hopefully your PC has one built in, but if not you'll need one to set up OSMC using this method.
- There are a few optional extras you can get as well:
- * A USB Wi-Fi adapter. The Raspberry Pi has wired networking built in, but no Wi-Fi. (Cheap 802.11n ones cost about \$15).

- * A Media Center Remote with USB IR receiver (about \$15). More on this in a moment.

THE REMOTE

OSMC can be entirely controlled with a remote control. You don't ever need to plug in a keyboard or mouse (though you can). What's more, you may not even need to buy a remote.

Whether or not you need a new remote depends on whether your TV supports HDMI-CEC (consumer electronics control). HDMI-CEC is also known by a variety of vendor brand names, like Panasonic Viera Link, Samsung Anynet+, Pioneer Kuro Link, Sharp Aquos Link, Sony Bravia Sync and so on.

HDMI-CEC allows your TV to send device signals down the HDMI cable to attached devices to control them. Essentially, it will let you use your TV remote to control the Raspberry Pi.

Does your TV remote have media playback buttons on it? It's likely that it supports HDMI-CEC. You can also go into your TV's setup menu and see if you can locate it, either under the HDMI-CEC name header or on the particular vendor's brand name.

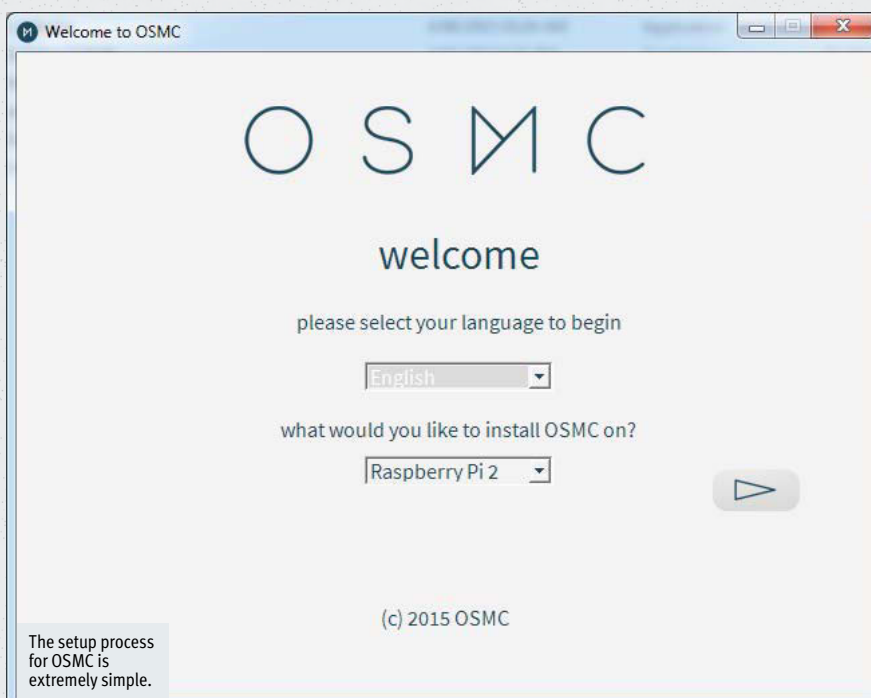
If your TV does not support HDMI-CEC, then you'll need a remote and USB IR receiver for the Pi. The cheapest and easiest way is to use a Windows Media Center Remote. OSMC works perfectly with Media Center Remotes, no setup required.

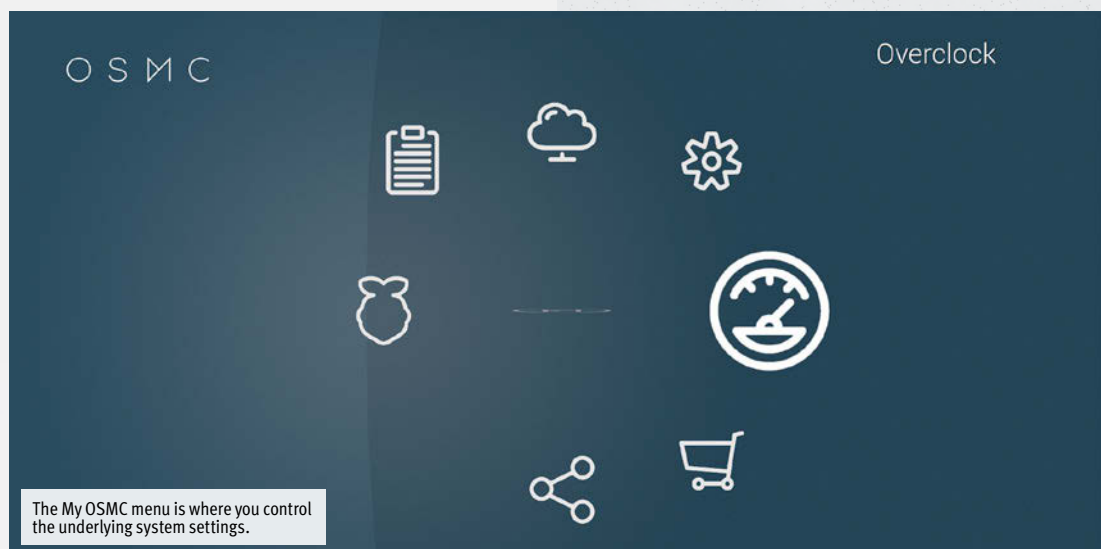
OSMC absolutely works with mobile phone remotes as well, like Kore on Android.

SETTING UP OSMC

Now let's get down to the setup. It's actually very easy with a Windows PC (which is why we went with OSMC over alternatives like OpenELEC):

- 01 Put the Micro SD card into the SD card reader on your PC.
- 02 Go to osmc.tv and download the Windows installer for Raspberry Pi 2.
- 03 Run the installer and step through the options: Choose your language and platform (Raspberry Pi 2); choose the latest version of OSMC to install; choose what type of





If your TV supports HDMI-CEC (many do), you can use your TV remote to control OSMC.

device you'd like to install it on (SD card); whether you'll be using wired or wireless. Finally, you'll see a list of detected SD cards in your system.

04 The installer will then proceed to download an operating system image and install it onto the SD card. Once it's done, you can close the installer and eject the card.

STARTING THE RASPBERRY PI

Now that we've installed OSMC on the SD card, let's get it running on the Pi.

The first thing to do is put together your Raspberry Pi, which really means just installing it in the case. Put the SD card into the Micro SD card slot on the Raspberry Pi 2. Plug the HDMI cable in, and also the USB WiFi adapter or IR receiver if you have them.

Grab the micro USB cable and plug it into the Pi's micro USB power port and any powered USB port. Much like many phones, the Pi is powered over USB — and it will need roughly 900mA to operate (so some ports might not provide enough juice). Most USB ports on TV sets will do the trick, but some will not. I have it running off the USB port on a Linksys router. You could also plug it into a powered USB hub or a USB wall socket as long as the socket provides 1A or more.

As soon as the power is plugged in OSMC should start to load. There's a brief initial setup process and then you're good to go.

SETTING UP THE REMOTE

If you're using a Windows Media Center remote, OSMC should just work.

If you're planning on using your TV remote through HDMI-CEC, you might have to go through an extra step. Go into your TV's setup menu, and find the HDMI-CEC/AnyNet+/Viera

Link/Aquos Link/Bravia Sync/whatever-it's-called-on-this-model setup. Make sure it's turned on, and you should see the OSMC device listed (you may have to go through device discovery process first). Select it.

Once you've done that, the arrow keys, select and media control keys should work for the Pi as long as they're not being used by the TV set.

USING OSMC

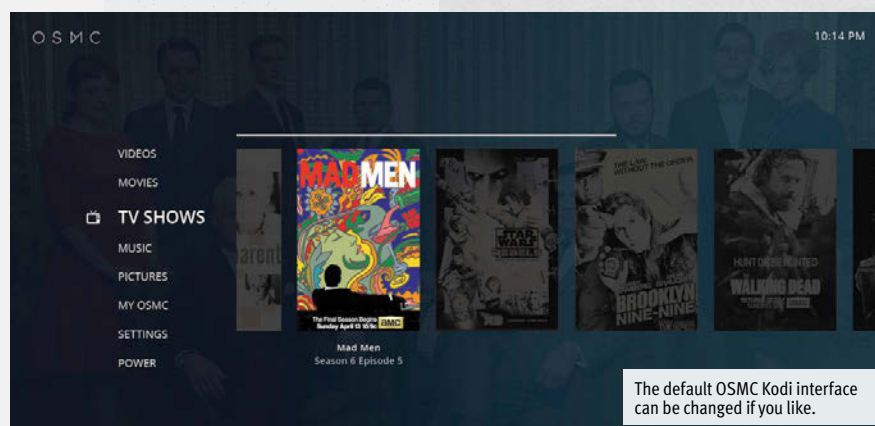
OSMC works exactly like the desktop version of Kodi. You add sources and plugins the exact same way, and it supports most plugins and all the sources and formats that Kodi on Windows does. Although it runs on Linux, there's no real Linux-ish stuff to deal with: Kodi is the interface.

It defaults to the OSMC skin, which is a very basic looking skin, but you can change that by going into the settings and changing it to Confluence (the default skin for other Kodi versions) or another skin. You should be aware that if you do that, you'll lose a special menu that only appears on the main page of the

OSMC default skin: the My OSMC menu. It's no big deal, however: you can still access it by going to Programs and selecting the OSMC plug-in.

The special menu in question is the system control menu. It lets you control your Raspberry Pi 2 settings, configure automatic updates and install new apps into the underlying Linux operating system from the App Store. You probably don't ever need to access it, but you can experiment with it if you like. ■

The Pi is powered by a Micro USB cable. Be warned: not all USB ports provide enough power to drive it!



[SECURITY AND PRIVACY]

Hardening your VPN

WHEN IT COMES TO NETWORK SECURITY, USING A VPNS SERVICE IS A VERY GOOD START. BUT IT'S NOT PERFECT.

[NATHAN TAYLOR]

VPNS BY DEFAULT provide excellent security and anonymity, but that doesn't mean they're uncrackable. If you want to be truly secure, there's more you can do.

CHANGING THE VPN PROTOCOL

There isn't just one type of VPN. There are actually a variety of different VPN protocols in common use, and many VPN providers actually give you a choice. Sometimes that choice is available in the connection app; sometimes it's simply a configuration option for third-party VPN tools.

Most commonly, your options are PPTP (point to point tunnelling protocol), L2TP/IPSec (layer 2 tunnelling protocol) and OpenVPN.

Especially if you're setting it up yourself on a mobile device or flashed VPN router, PPTP and L2TP can seem like the better option, since they're much easier to configure. In many cases, you only really need a server name, username and password.

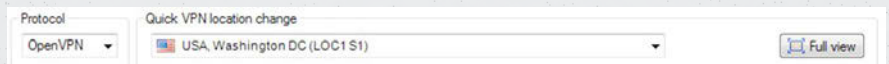
It's absolutely worth using OpenVPN, however. PPTP has essentially been cracked — it uses weak 128-bit encryption and the initial connection and authentication process can be intercepted and cracked. On the upside, it's actually the fastest of the protocols because it has lowest encryption overhead.

L2TP is more secure. But it also adds a lot of overhead, and is the slowest of the protocols.

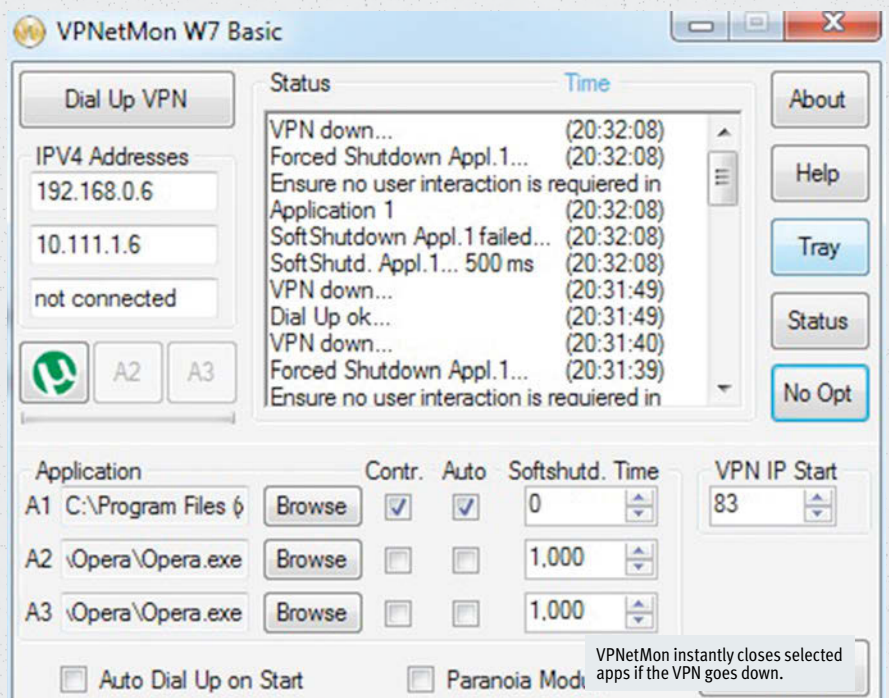
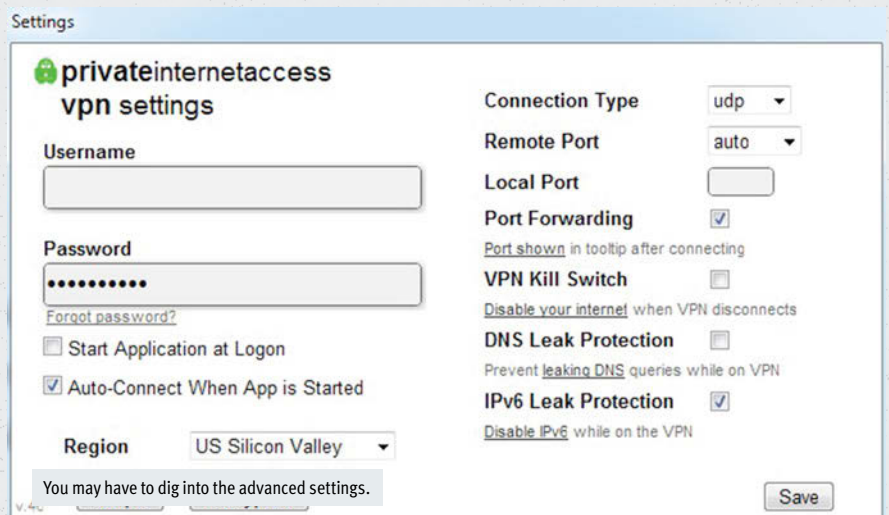
OpenVPN is the best of both worlds: it's fast, recovers quickly from lost connections and is completely secure as far as we know. If you have the option, it's the way to go.

THE KILL SWITCH

One of the issues with a VPN connection is that if the VPN connection fails — if the VPN server goes down or the connection is lost — your computer will immediately drop back to your regular internet address, potentially making you vulnerable. You probably won't even know it has happened.



Many VPN client apps let you choose which VPN protocol you'd like to use. OpenVPN is your best bet.



That's where the kill switch comes in. It ensures that if you lose the VPN then either your internet connection is shut down or the apps that use it are. Essentially, if you're not connecting over the VPN, you're not connecting at all. Some VPN connection apps actually have it built in. If you want to use it, you just switch it on.

An alternative is VPNNetMon (vpnetmon.webs.com), a great little app for Windows that can be configured to instantly close selected apps if the VPN dies and restart them if it goes up again.

To set it up, follow these steps:

- 01 Connect to your VPN.
- 02 Start the app and click on Opt.
- 03 On the left, it should show two IP addresses: your local IP address (on top), and your VPN IP address (second). In the field where it says VPN IP Start, enter the first number of your VPN IP address; for example, if it's 10.1.1.68, then type in 10. This is how it detects if you're connected.

04 Next to A1, click Browse and find an app you'd like it to control, eg. [utorrent.exe](#).

If you check the Control box it will automatically shut it down if your VPN goes offline. If you check Auto, it will restart it when the VPN comes back on.

DNS LEAKS

DNS, if you remember, is that service that your computer uses to translate URLs like [techradar.com](#) into IP addresses.

When you're connected to a VPN, you should automatically be using the secure DNS server provided by the VPN service. Except sometimes you don't; sometimes your computer might use its regular DNS connection, bypassing the VPN. That's called a DNS leak, and it could be monitored by outside forces.

Some VPN clients have DNS leak protection built in, but if it doesn't you can run a test at [www.dnsleaktest.com](#). The location it tells you should be your 'apparent' VPN location, not your actual one. If it fails, then there's a quick app you can download from the site that provides a fix.

IPV6 LEAKS

For most internet activity, we use the good old version 4 of the internet protocol; you know, the one with the four-number IP addresses. The thing is, there's actually a version 6 of the protocol as well, which is designed to provide a lot more internet addresses than IPv4. Now, nobody actually uses IPv6 outside of academia, but your PC still supports it.

IPv6 operates outside of the VPN, and an attacker might use it to figure out who you are. It's not something that's done often, but it is possible, and the only real fix is to disable IPv6. Some VPN clients have the ability built in, but if you want to do it manually, there's a quick guide at [tweaks.com/windows/40099/how-to-properly-disable-ipv6/](#). There's also an official Microsoft guide (with apps) at [support.microsoft.com/en-us/kb/929852](#).

If you just want to check if your system is leaking, you can also head to [ipv6leak.com](#) and run a test while you're connect to the VPN. ■



Phew.

"IF YOU CHECK THE CONTROL BOX IT WILL AUTOMATICALLY SHUT IT DOWN IF YOUR VPN GOES OFFLINE. IF YOU CHECK AUTO, IT WILL RESTART IT WHEN THE VPN COMES BACK ON."

THE HOLA THREAT

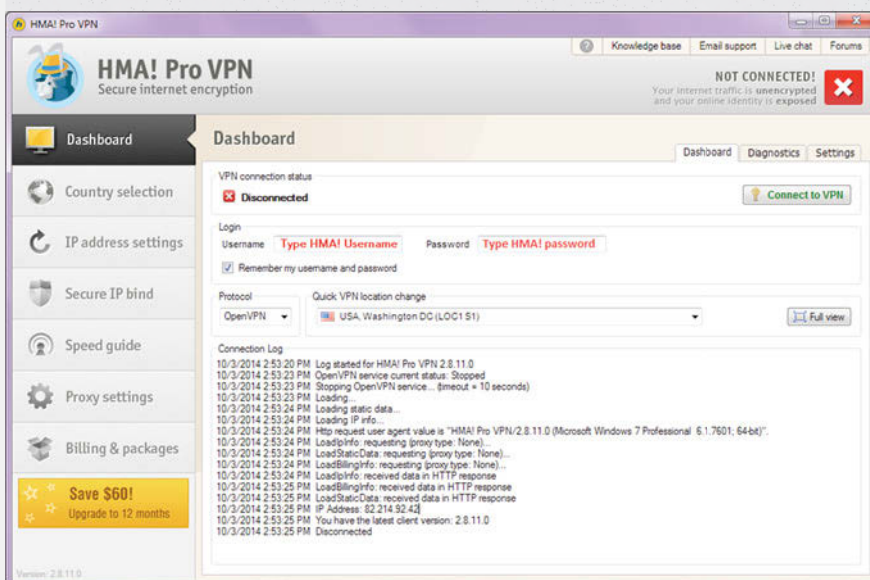
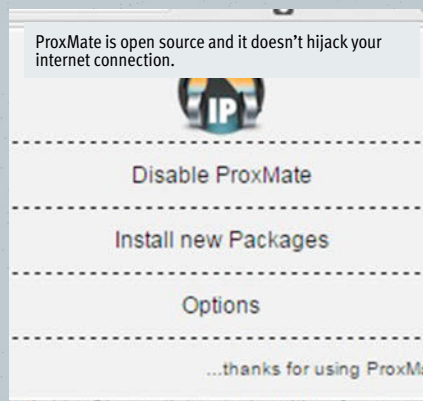
We have, on several occasions in this magazine, talked about and even endorsed a system called Hola Better Internet. Hola is a very convenient peer to peer system for bypassing geoblockers. If you want to bypass a geoblocker, then Hola lets you route your connection through another Hola user in the country you wish to appear to be from, using their bandwidth to access the site. The price of Hola is that other users could use your bandwidth in similar fashion, which is a bandwidth usage risk but one you might accept. And as long as people went in eyes open, we were cool with that. After all, that's how a peer to peer system works.

A few recent revelations have turned us around on Hola however, and we'd now recommend to most people that it should be uninstalled. The first is the revelation that Hola was selling users' bandwidth outright through its commercial Luminati VPN service ([luminati.io](#)), where it was using Hola users as exit nodes on the network. That's well beyond anything that was listed in the FAQ or user agreement when installing Hola, and something that we doubt many users would agree to if they knew about it.

More damning, though, was the reveal of huge security holes in the network. One hacker exploited the Luminati/Hola network to launch a denial of service attack on internet site 8chan, essentially turning the service into a botnet. Soon after, cyber security firm Vectra hit Hola with a damning report on its security, pointing out a number of exploitable holes in the app that could allow attackers to take control of your system.

The good news is that there may be some interesting alternatives available. ProxMate ([proxmate.me](#)), for example, is open source browser add-on that uses volunteers' proxy servers for bypassing geoblockers on specific sites that you install packages for. It does not automatically offer your system up as a proxy (unlike Hola). We tested it with Netflix and it actually works pretty well.

VPN Gate ([www.vpngate.net](#)) is an academic exercise that's similar, using only volunteer bandwidth. It's set up as a full VPN service. We don't know if either of these is sustainable long term, but we'll be keeping an eye on them.



[HOME NETWORKING]

Turn a router into a wireless range extender

NO NEED TO GO OUT AND BUY A RANGE EXTENDER: YOU CAN MAKE YOUR OWN.

[NATHAN TAYLOR]

LAST MONTH, IN our feature on bypassing geoblockers, we walked through setting up DD-WRT on a router in order to take advantage of its in-built VPN capabilities. DD-WRT, in case you missed it, is an open source router firmware alternative, replacing the factory firmware that your router came with and adding a whole host of features.

One of those features is the ability to reconfigure your old (or new) wireless router as a bridge and a repeater. Any router that DD-WRT can be installed on can be turned into a wireless repeater and bridge.

A wireless repeater takes the signals from your main wireless network repeats them on another. It's used for range extension: the repeater takes the signals from your primary wireless network and repeats them on its own network. In addition, the router can serve as a bridge. That means that wired devices that you connect to its LAN ports (like TVs or game consoles) will also be connected to its wireless network.

We won't go through setting up DD-WRT again here — but you can check out our last issue or head to www.dd-wrt.com for a guide.

SETTING UP THE ROUTER AS A REPEATER BRIDGE

To set up the router as an extender and a wired-to-wireless bridge, just follow these steps:

- 01 Plug your PC directly into the DD-WRT router via a LAN connection.
- 02 Set up the router as a client to your main network.

Log onto the DD-WRT's main admin page (the address is 192.168.1.1; username root; password admin). Click on 'Basic Settings'.

Under 'Network setup > Router IP', set the DD-WRT router up so that it's a client for your main network:

- * Set the Local IP address to something that has the same first three numbers as your main router, but a fourth number that's different. For example, if your main router's IP address (that's the IP address you use to access its admin interface) is 192.168.0.1, you could set this to 192.168.0.2.

- * Subnet mask is 255.255.255.0.
- * Gateway is the IP address of your main router.
- * Local DNS is also the IP address of your main router.

Click on Save. Note that if you want to log onto the admin console again, you'll have to use its new IP address (192.168.0.2 in the example above).

03 Click on the Wireless tab. It's here that we'll be configuring it as a router bridge.

04 Enable repeater mode:

- * Change the Wireless Mode to Repeater Bridge then click on Save at the bottom. Some of the (now irrelevant) fields will disappear.
- * Change the Wireless Network Mode to match the type of network your main router uses (Mixed should work as well).
- * Network configuration should be Bridged.

Note that you don't actually need to fill in the SSID field (it will be done automatically when we complete step 6), but for reference it will need to have the exact same SSID as your primary network.

Click on Save again when you're done.

05 Security time. Click on the Wireless Security tab.

- * Change the Security Mode to match the one used by your main router (WPA2 is most common).
- * In the password field (WPA Shared Key for WPA security modes), type in the wireless password for the network. Click on Save.

06 Now we just need to connect to the primary network. Click on the Status tab at the top of the window, then on the Wireless sub-tab.

Down the bottom you'll see a button: Site Survey. Click on it.

“THE ROUTER CAN SERVE AS A BRIDGE. THAT MEANS THAT WIRED DEVICES THAT YOU CONNECT TO ITS LAN PORTS (LIKE TVS OR GAME CONSOLES) WILL ALSO BE CONNECTED TO ITS WIRELESS NETWORK.”

The screenshot shows the DD-WRT control panel interface. At the top, there's a status bar with 'Firmware: DD-WRT v24-sp2 (03/25/13) big', 'Time: 00:05:17 up 5 min, load average: 0.08, 0.06, 0.01', and 'WAN IP: 0.0.0.0'. Below this is a navigation menu with tabs: Setup, Wireless, Services, Security, Access Restrictions, NAT / QoS, Administration, and Status. Under the 'Setup' tab, there are sub-tabs: Basic Setup, DDNS, MAC Address Clone, Advanced Routing, VLANs, Networking, and EoIP Tunnel. The 'Basic Setup' sub-tab is active, showing the 'WAN Setup' section. In the 'WAN Setup' section, 'WAN Connection Type' is set to 'Automatic Configuration - DHCP'. Below this is the 'Optional Settings' section with fields for Router Name (DD-WRT), Hostname, Domain Name, MTU (set to 1500), and STP (set to Disable). To the right of the 'Optional Settings' is a 'Help' section with a 'more...' link. Below the 'Optional Settings' is the 'Network Setup' section, which includes the 'Router IP' configuration. The 'Router IP' section has a table for IP configuration:

Local IP Address	Subnet Mask
192 . 168 . 0 . 2	255 . 255 . 255 . 0
192 . 168 . 0 . 1	255 . 255 . 255 . 0
192 . 168 . 0 . 1	255 . 255 . 255 . 0

Below the table, it says 'Setting the router up as a client on your main router.' To the right of the 'Router IP' section is another 'Help' section with a 'more...' link. This section contains information about 'Automatic Configuration - DHCP', 'Hostname', 'Domain Name', 'Local IP Address', 'Subnet Mask', 'DHCP Server', and 'Start IP Address'.

This brings up a window that shows you all the wireless networks visible in your area. Now you need to find the name of your primary network and click on the Join button next to it.

Hopefully it should note that you've successfully joined the network as a client. If it worked, you should now have internet access (you may have to head back to Wireless and click Apply Settings, or reboot the router for it to kick in). Essentially, this router is talking to your primary router over wireless, which is what we were after.

Now, any device connected to one of the wired ports on the router should have internet access — it will take that data off the wired connection and put it on the wireless one. You've effectively created a wired-to-wireless bridge.

But we're not quite done. We still have to extend the network. We do this by creating a virtual wireless interface with a separate SSID from the primary network. When you want to connect to this router, rather than the primary one, you'll connect to this SSID.

07 Head back to 'Wireless > Basic Settings'.

Under the main router setup pane you'll see a button to 'Add a Virtual Interface'. Click on it. This will set up a our second virtual wireless network. This is the one that you'll connect to if you want to connect to the extender rather than the primary router.

The section will expand. The only thing you need to do here is give it a new SSID, one that's different from the main network. When a client wants to connect to the extender, this is the SSID it will use. Click on Save.

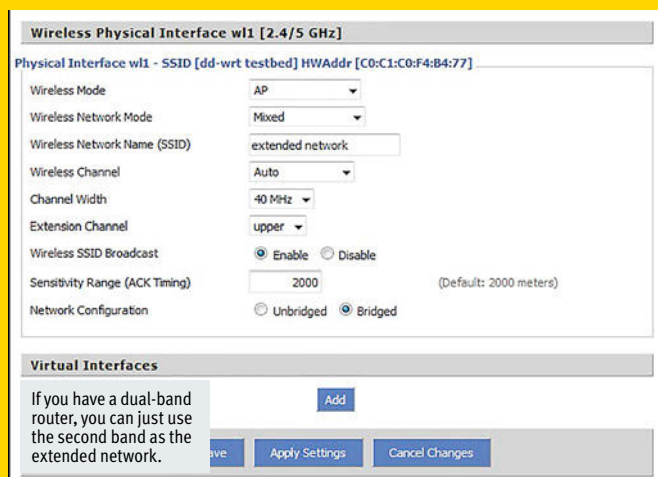
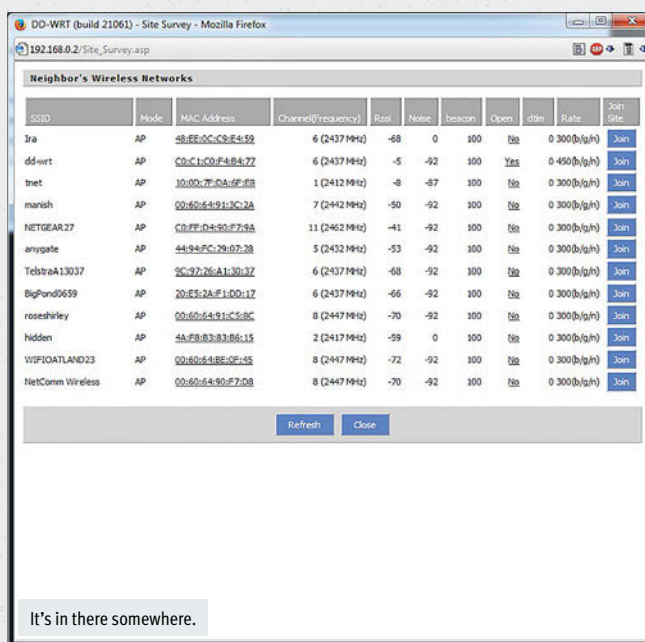
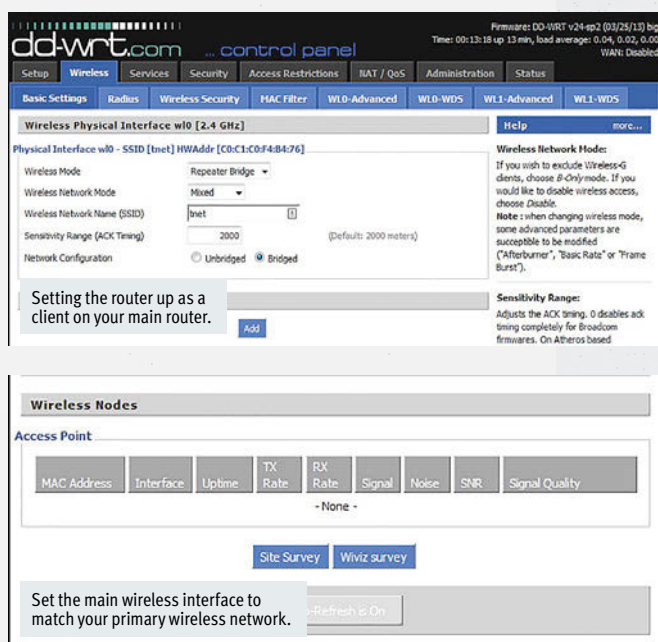
08

Remember we need to secure the virtual wireless network as well. Click on Wireless Security and look for the Virtual Interfaces section.

Change the security mode from Disabled to WPA2 Personal and then type in the Shared Key (password) for the extended network. It can be the same as or different from your primary wireless network.

Click on Save and Apply.

And now you should be all done. The new network will appear on your list of available networks when you browse Wi-Fi networks, and you can connect to whichever is better for you in the moment. If you've set up passwords for both, your wireless device should automatically choose for you, based on whichever has the strongest signal strength. ■



CROSS-BAND AND DUAL-BAND ROUTERS

Our guide here assumes you only have a single band router. But what if you have a dual band router? It's absolutely possible to set it up so that one band connects back to the main router, while the other provides the extended network. This is a setup known as cross-band, and it can actually have some significant performance benefits over the virtual SSID model in the guide above.

It's very simple to set up. Follow steps 1 through 6 above. But instead of creating a virtual interface in step 7, we're just going to use the second band.

Simply set the second band up with the Wireless Mode as regular AP (access point). Give it a unique SSID and make sure the Network Configuration is set to Bridged. Save it. Then click on Wireless Security, and (just as you did for the Virtual Interface in step 8) give it a password.

Of course, your client devices need to be able to talk to this second band. In a dual-band router, the second band is the 5GHz band, and not all mobile devices support it. If your mobiles only work in the 2.4GHz band, you'll have to use the virtual interface instead (as in step 7 and 8) — or set up the 5GHz band as the Repeater Bridge and use the 2.4GHz one as the regular AP.

[WINDOWS]

Organise your PC desktop

USE A BRILLIANT TOOL THAT HELPS STOP YOUR PC DESKTOP BECOMING A DUMPING GROUND FOR FILES

[NICK PEERS]

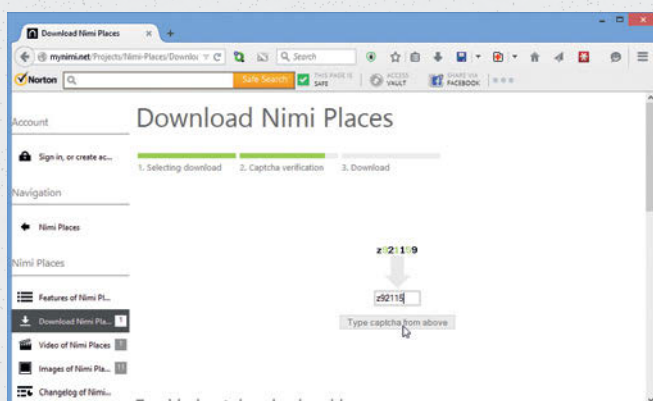
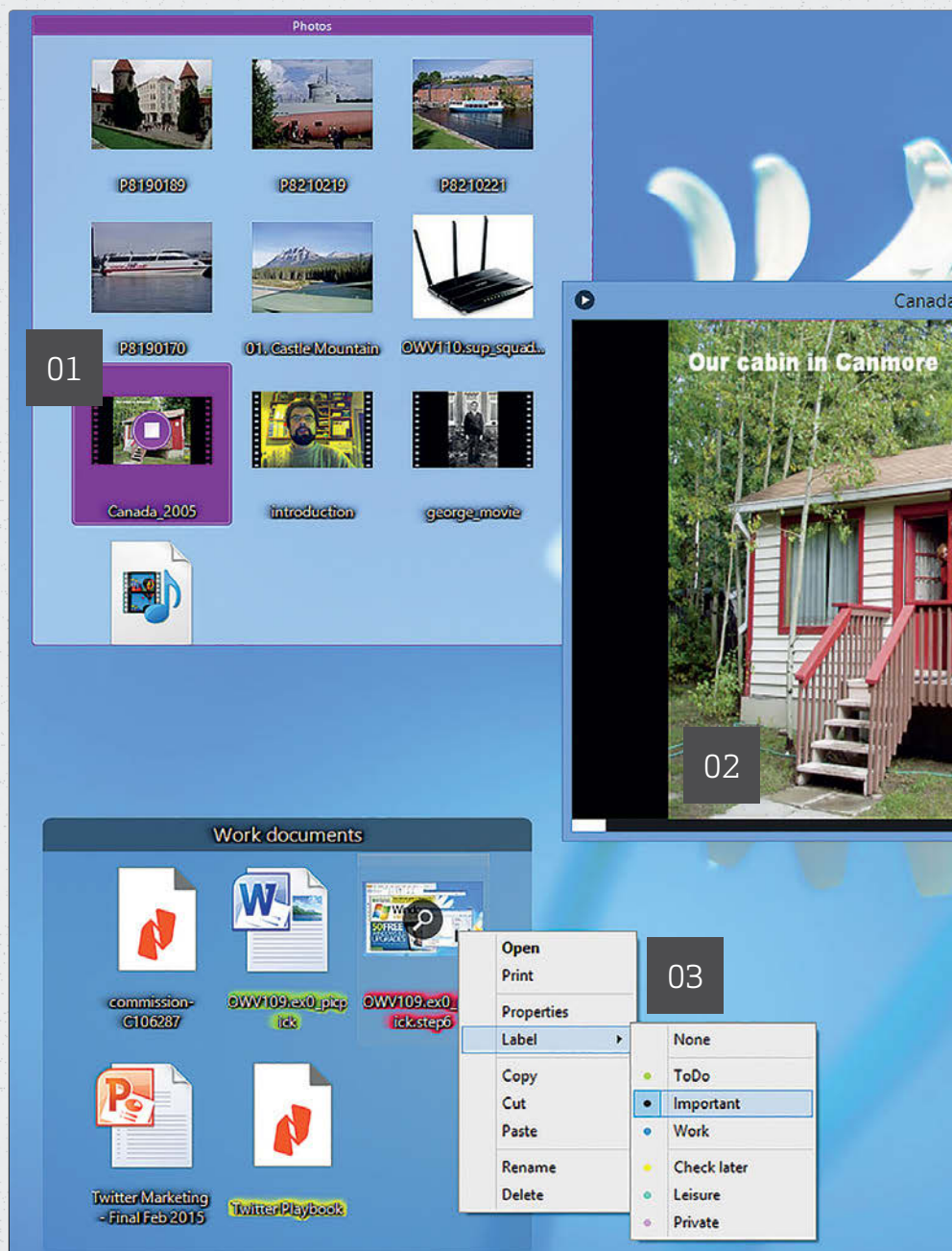
OUR WINDOWS PC desktop can easily become a no-go area if you're not careful. It doesn't take long to fill the clear space as you (and your programs) start dropping files and shortcuts onto it for easy access. After a while, the clutter threatens to render your desktop meaningless, but before you abandon it, check out Nimi Places.

This free tool enables you to take back control of your desktop by organising its content into containers. Each container (or Place as Nimi Places calls it) can be a standalone space for dropping files into for easy access, or you can point them to existing folders on your hard drive. Customise them to suit your way of working, plus make your files or shortcuts more visible and easy to manage. Read on to find out how to bring order back to your chaotic desktop.

[STEP BY STEP]

HOW TO SET UP AND USE NIMI PLACES

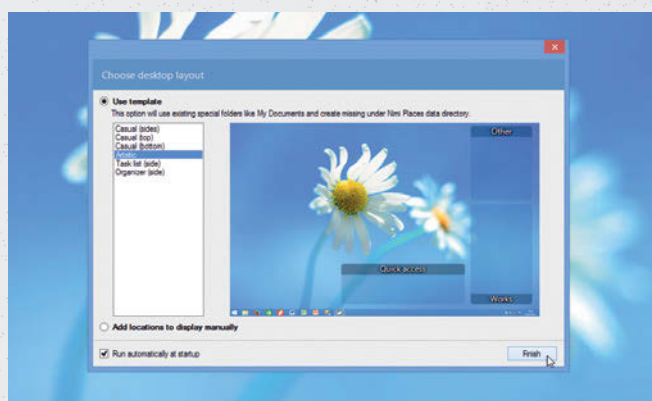
Clean up your desktop in a few easy steps.



01

FIRST STEPS

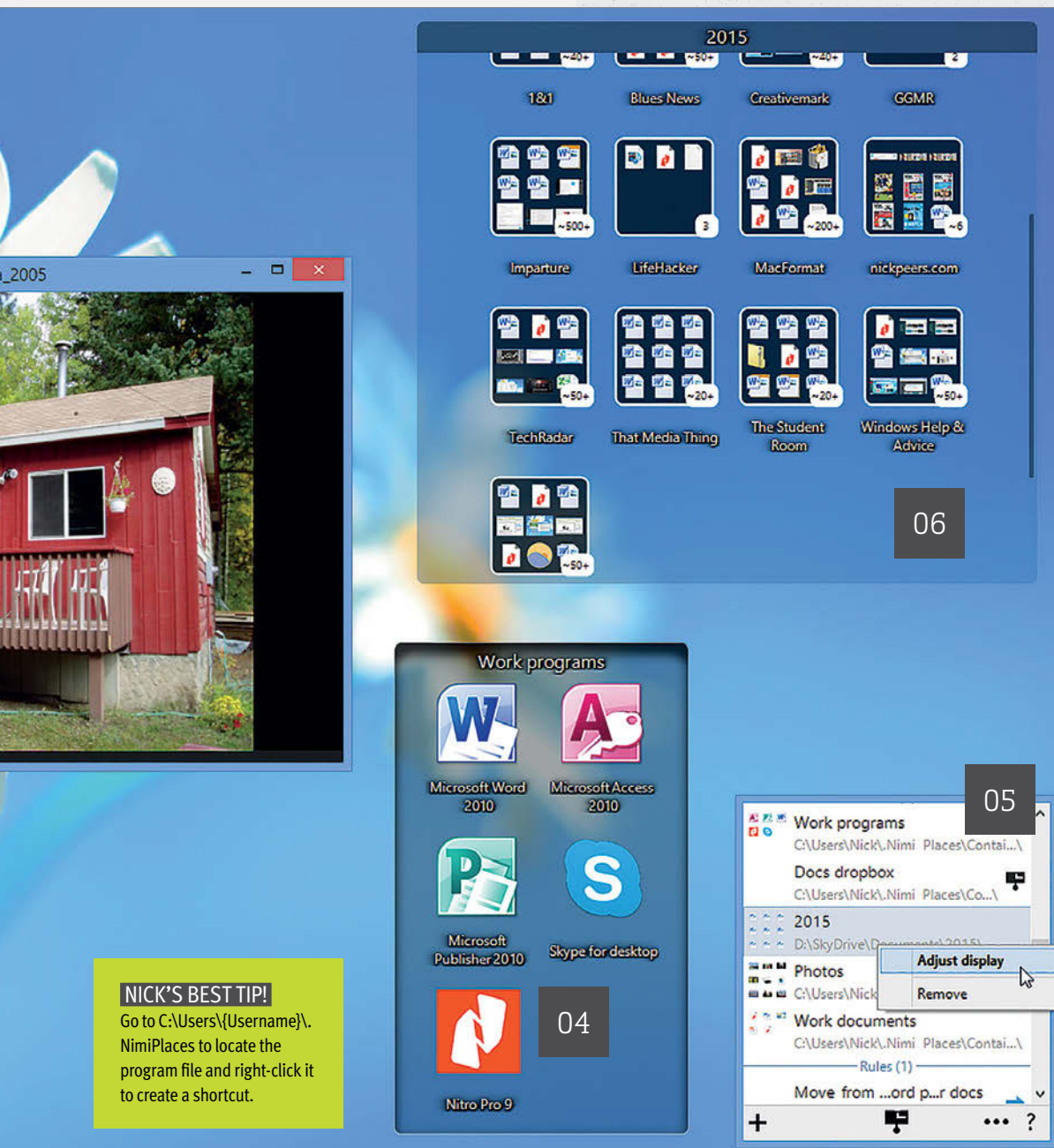
Go to mynimi.net and click 'Download Nimi Places' followed by Download. Enter the captcha code and click Download again. Once downloaded, double-click 'Extract Nimi Places (Portable).exe' — if prompted, click to download and install .NET Framework, then relaunch setup. Click 'Unpack and launch' followed by Yes. Tick the license agreement box, click 'I agree', then OK.



02

SET BASIC LAYOUT

A window will appear with two options. To get started quickly, leave 'Use template' selected and click on each of the six templates until you see a layout you like. If you choose 'Add locations to display manually', you'll need to add containers yourself from scratch. For now, pick a template, choose whether or not to launch Nimi Places with Windows and click Finish.



NICK'S BEST TIP!

Go to `C:\Users\{Username}\NimiPlaces` to locate the program file and right-click it to create a shortcut.

01 CUSTOMISED CONTAINERS

Each container can be customised with its own theme — right-click it to view the options.

02 ACCESS MEDIA

Common video, audio and image formats can be previewed using a built-in player — look for a preview button over the file.

03 LABELS

Right-click a container entry and allocate a label to it. This will appear around the filename, to help you identify it.

04 ICON SIZES

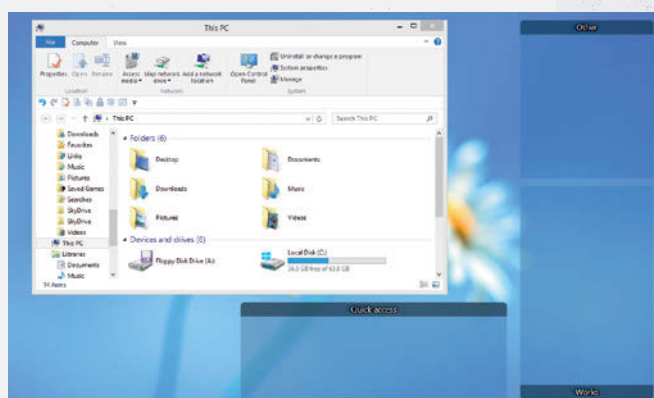
Manually increase and decrease the size of a container's icons using 'Ctrl+/-'.

05 ORGANISE YOUR CONTAINERS

Click the Nimi Places Taskbar Notification area icon to set up containers, plus file and folder rules.

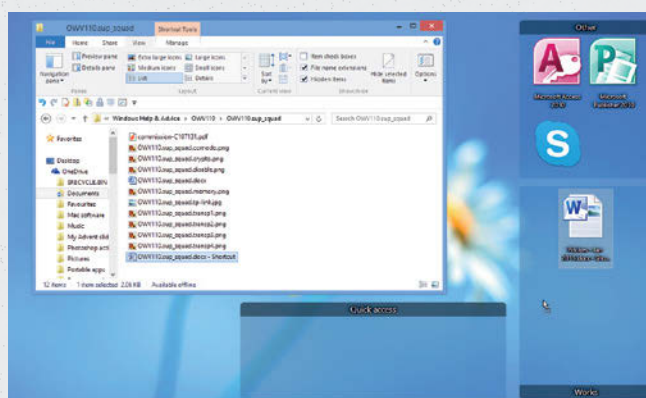
06 LARGE FOLDERS

Click inside a container and use the slider on the right or your mouse's scroll wheel to navigate through its contents.



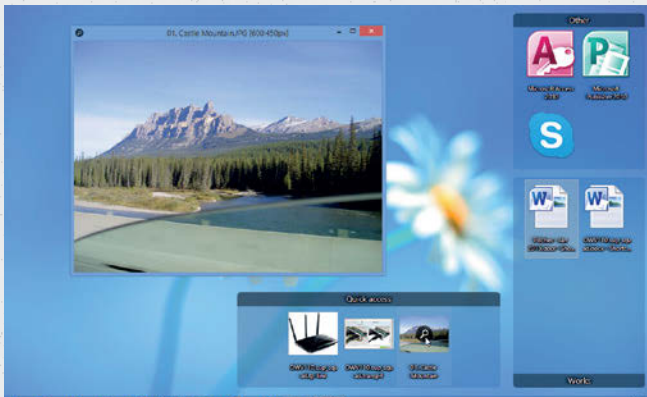
03 PLACES 101

Your desktop is now overlaid with empty containers (known as Places). Each container can contain a mix of files, including documents, media files (such as photos or video) and even program shortcuts. Containers can be customised, plus you can make them visible only at set times of day, when you're in a specific location or when a specific program is in the foreground.



04 ADD CONTENT TO CONTAINERS

Move or copy files and shortcuts to each container by clicking and dragging them from the desktop, your Start menu or an Explorer window to the relevant container. By default, the file is moved to this location, hold the Control key as you drag to copy it across. When linking files, we recommend creating a file shortcut inside the original folder, then dragging that across instead.



05

INTERACT WITH CONTENT

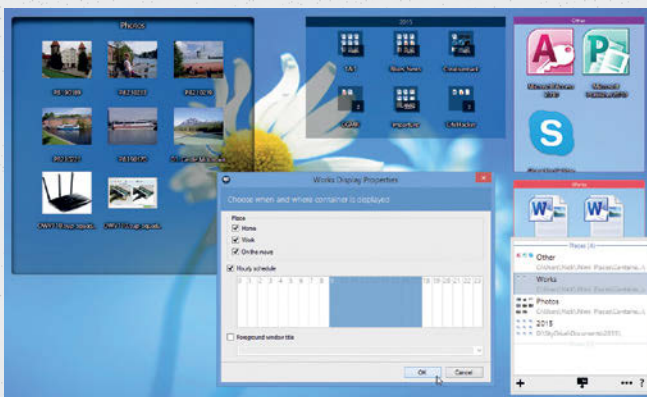
Double-click a file or shortcut inside the container to open it in its parent application. Some media files can be previewed — just roll your mouse over the file in question and click the magnifying glass icon that appears. You can copy files back out of the container by dragging and dropping them, or right-click the file for more options, such as allocating labels.



07

REPOSITION, RESIZE AND RENAME

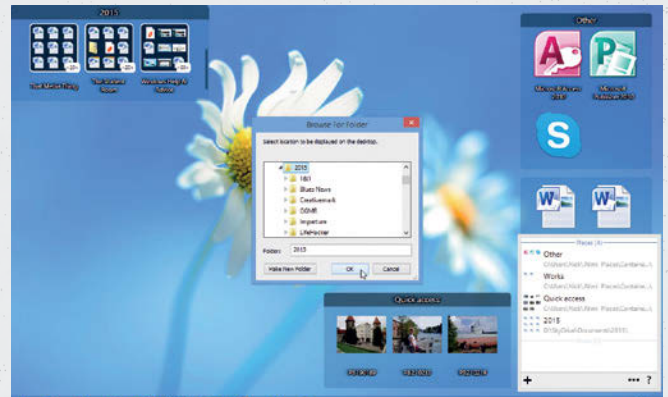
You can click and drag on the container's title bar to reposition it on-screen — you can also resize the container using its drag handles. Right-click the container title bar to change its name or select more title bar options, such as positioning the title bar at the bottom of the container or hiding it completely. Access these options via the 'Appearance > Title' sub-menu.



09

MANAGE VISIBILITY

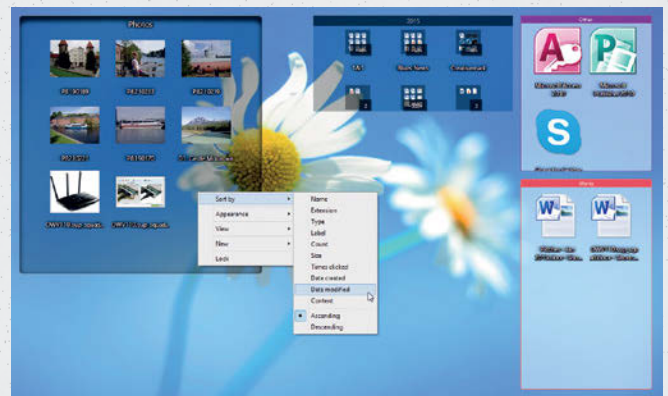
You can make containers visible only at selected times: click the Nimi Places Taskbar notification area icon, right-click the container in question and choose 'Adjust Display'. Tick 'Hourly Schedule' to make the container visible only during those hours marked in blue on the screen. Use the drag handles to select which hours these are. Double-click to reverse the selection.



06

ADD FOLDER-BASED CONTAINERS

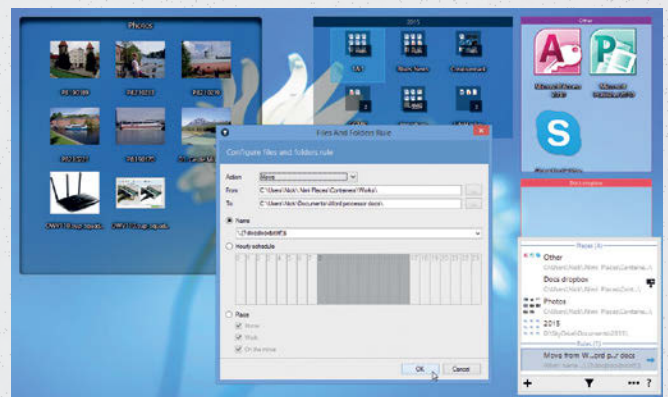
You can also create containers that point to specific folders on your computer, making them easy to access. To do this, click the Nimi Places Taskbar notification area icon (click ^ if necessary to make it visible). Click the '+' button and select Place, then browse and select the folder you wish to place on the desktop. Close the management window and the container will appear.



08

MORE CUSTOMISATION OPTIONS

Right-clicking reveals many more options too: 'Sort by' determines the order in which the container's items are displayed, while View lets you change icon display size. Select 'Appearance > Theme' to choose a different look for each container (Inset is a particularly striking theme). Select Lock to temporarily disable all access to the container as well as lock it into position.



10

AND THERE'S MORE

Click the '+' button from the Nimi Places Taskbar icon and choose 'Files and folders rule'. This allows you to set up a drop box — files dragged into one folder that match a certain regular expression can then be automatically copied or moved to another folder (or a shortcut created in the target folder). Visit regexr.com for a tool that teaches you about the expressions required. ■

{ IOS }

Manage files with Documents

WITH NO IOS EQUIVALENT OF FINDER, THIS USEFUL FREE FILE MANAGER FILLS THE VOID

[CRAIG GRANNELL]

AS OF ICLOUD Drive, Apple has somewhat opened up the file system on iOS, enabling you to delve into app folders and open and save documents without ending up with loads of copies lurking 'inside' different apps. But unlike on OS X, where you have Finder, iOS lacks any kind of app for simply browsing on-device files. Documents 5 (readdle.com/documents) wears a number of different hats — it's a PDF reader,

media player and download manager. Through fully supporting iCloud Drive and the iOS Document Picker, it's an app that enables you to explore and to some extent manage the files stored on your iPhone, iPod touch or iPad.

There are restrictions over and above what you find on the Mac. Any document sitting inside an app folder in iCloud Drive can't be moved, and unless a file's type is supported

by Documents 5, it can't be previewed either. However, for now this is the best you'll get, and the lack of a price tag makes Documents 5 a no-brainer.

Note that here we explore the iPhone version, but this is a universal app. On iPad, it works in much the same way, but uses a permanently displayed sidebar for accessing locations and recent files.

[HOW-TO]

FIND YOUR WAY AROUND DOCUMENTS 5

PREVIEW AND OPEN FILES AND MOVE THEM ABOUT THE PLACE.

SET UP SETTINGS

01 Tap the menu button at the top-left of the screen to access settings, which enable you to toggle passcode lock and define where downloads go. The sidebar also provides an Open button for accessing iCloud documents and any other connected cloud storage accounts, such as Dropbox or Box.

EDITING ITEMS

02 Tap Edit and any editable document will have an empty circle at its top-right. Tap it and a tick will appear. You can then use the toolbar buttons at the foot of the screen to copy, move, rename or delete the item. The Actions button provides further actions, so you can zip multiple-item selections. The archive can then be uploaded.

LOCAL DOCUMENTS

03 Aside from four smart folders (Starred Files, Recents, iTunes Files, Photos), other folders and documents can be rearranged by drag and drop — tap and hold to select something, then drag it. To move a file up one level, drag it to the top-left 'back' button.

ICLOUD DOCUMENTS

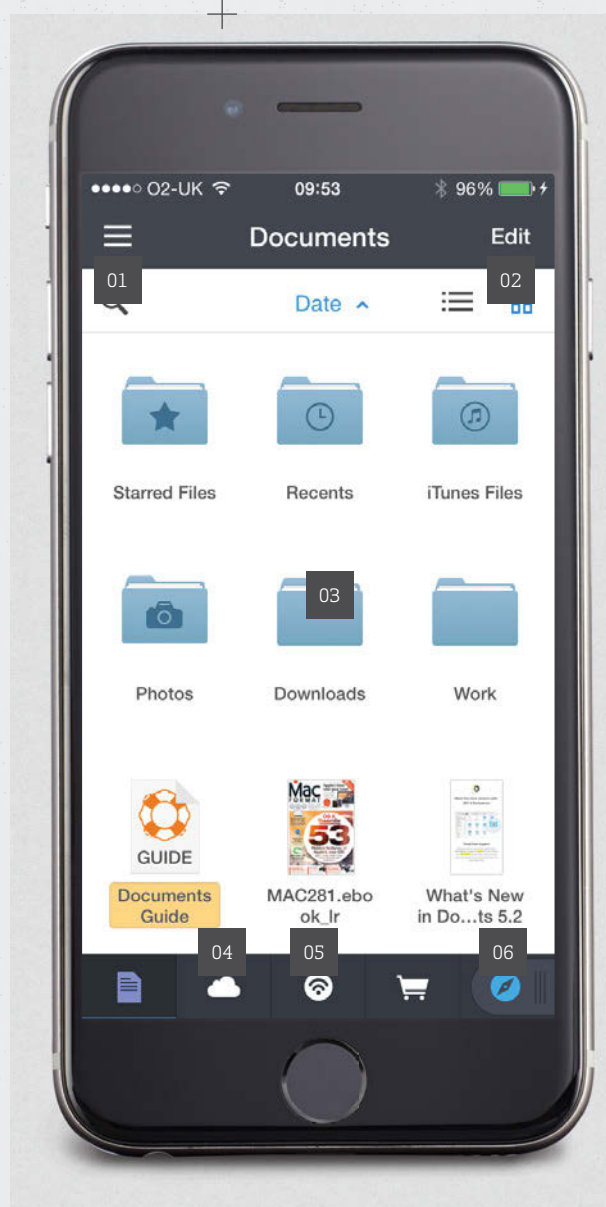
04 Documents 5 enables you to drag documents to and from its iCloud storage area. This then makes them available across devices and on any Mac that supports iCloud Drive. (On some devices, though, we've found iCloud access in Documents 5 can be sluggish.)

NETWORK ACCESS

05 Using the network section, tap the wireless icon to enable access to Documents files via a Mac/PC browser or WebDAV-compatible app. You can also add account details for cloud storage providers like Dropbox. Finally, available Macs will be listed. Sign in to upload files to Documents.

BUILT-IN BROWSER

06 Drag the browser button to the left to access the built-in web browser. A browser might seem superfluous, but it's designed for saving documents. Tap the save button top-right and you can save the page as a web archive or PDF and select a folder to place it in. Tap and hold a link and you can save (and rename) that specific file. ■



{ IOS }

Control iOS location sharing

SOMETIMES YOU'RE HAPPY FOR APPS TO KNOW YOUR LOCATION, SOMETIMES NOT...

[KENNY HEMPHILL]

YOUR IPHONE OR iPad uses multiple sensors to track your location. By combining data from GPS, Bluetooth, Wi-Fi and mobile phone cell towers, it can create a pretty accurate picture of where you are. It can be a very useful tool for maps, navigation tools and Apple's own Find My Friends and Find My iPhone apps. But, very reasonably, there may be occasions when you want to keep your location data private.

Fortunately, iOS 8 makes it very easy to give and revoke permission for apps to access location data. And it makes it very clear when your location is being shared and with which apps.

The first thing to note is that newly installed apps must ask you for permission if they want to access location data. This is done via an alert which pops up the first time you open the app.

If you give permission, that app can access location data whenever you use it, until you revoke permission.

Whenever any app is using your location data — for example, if Google Maps is giving you directions — the tiny location icon is displayed at the top of the screen. It disappears again when the app stops using your location.

[HOW-TO]

MASTER LOCATION SHARING IN IOS 8

THERE ARE SOME VERY FINE, DETAILED OPTIONS FOR CONTROLLING HOW IOS 8 SHARES YOUR LOCATION.

GLOBAL CONTROL

01 Location Services is tucked away in 'Settings > Privacy'. You can switch Location Services off completely using this toggle switch. You might want to do this if you have a specific reason for going dark, or if you need to preserve every ounce of battery life. This option is a pretty blunt instrument, however, preventing lots of features on lots of apps from working.

SHARING LOCATION

02 If you have an Apple Watch, the Location Services settings you specify here will also apply to the Watch. This is important to remember if you use, for example, the Maps app on the Watch to provide directions.

SHARING IS CARING

03 Tap here to share your location with friends or family. The next screen allows you to toggle location sharing on and off and shows you which device your location is being shared from, and with whom. You can also revoke or reinstate location sharing on a contact by contact basis.

SHARING WITH APPS

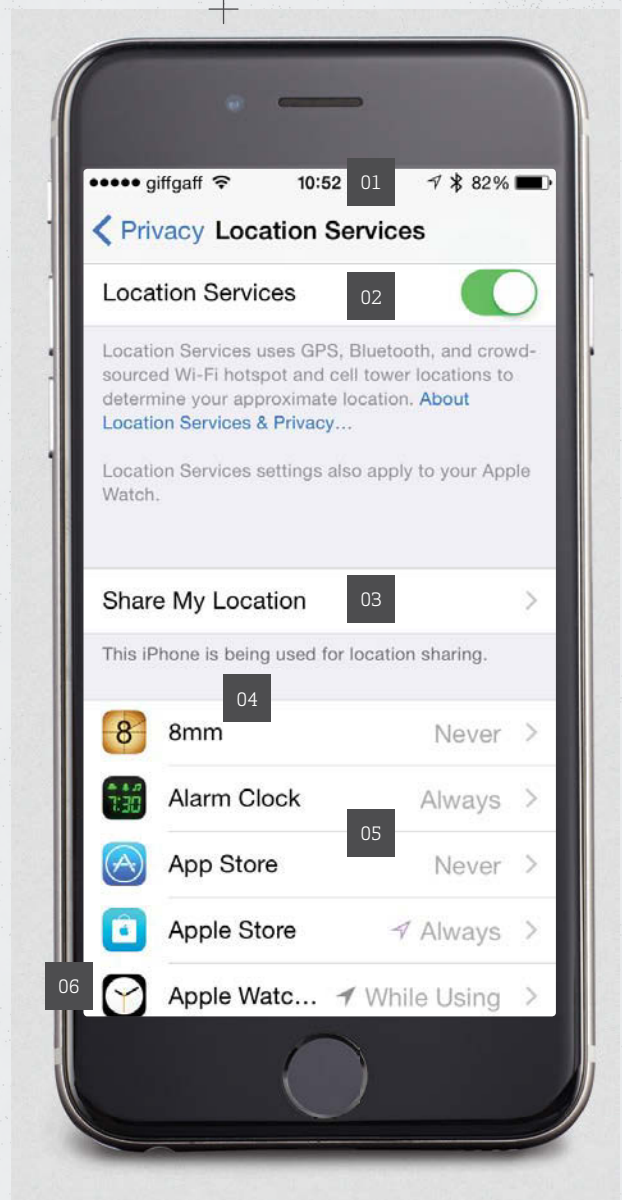
04 All the apps that would like to access your location data are listed, with their current status. In this case, the app at the top of the list has been refused access to location data completely, so any of its functions that rely on knowing your location simply won't work.

A THIRD WAY

05 There are three states for location sharing, at least two of which are available for every app that uses your location. For some apps the states are Always and Never. Others have a third option (in some cases it replaces Always) called While Using the App.

ALLOWING WATCH FACE COMPLICATIONS

06 Apple Watch Face is the newest addition to Location Services. It allows the Watch to access your location so it can determine the phase of the moon, sunrise and sunset times etc. Switching it off would mean that the many features that rely on that data wouldn't be able to display accurate information. ■





[PHOTOGRAPHY MASTERCLASS]

Core photography skills: White balance

LEARN HOW TO REMOVE COLOUR CASTS FROM YOUR PICTURES
– OR ADD THEM FOR CREATIVE EFFECT.

[MARCUS HAWKINS]

WHAT IS WHITE BALANCE?

The white balance control enables you to adjust the 'colour temperature' of images. Light sources vary in colour temperature, which is measured in kelvins (K). At one end of the kelvin scale is the warm glow from a candle and at the other is the cool blue light seen in shadows on a sunny day. By adjusting the white balance, you can fine tune this colour temperature.

SO WHY IS IT CALLED WHITE BALANCE?

Essentially because it enables you to ensure any whites in the image are rendered as 'pure' white. For instance, without a calibrated white balance setting, a sheet of white paper would appear orange when photographed under candlelight. White balance should really be called 'light balance', as the small icons you see when you scroll through your camera's white balance options all represent different lighting conditions.

DO I HAVE TO CHOOSE A DIFFERENT WHITE BALANCE EACH TIME I TAKE A PICTURE?

No you don't, as there's an automatic option that will continuously adjust the white balance for you. Overall, the camera's auto white balance (AWB) system makes a good fist of things, determining the type of lighting you're shooting in and setting an appropriate colour temperature.

It's particularly useful in those tricky situations where you're faced with mixed lighting, such as shooting a floodlit building at dusk or using flash to photograph someone in a room illuminated by traditional household bulbs.

However, as with the majority of camera settings, you'll often get more accurate results if you get involved in the process. Camera

manufacturers know that the automatic setting won't always get things right, so that's why they include a series of white balance presets to choose from.

HOW DO I KNOW WHICH PRESET TO USE?

Handily, once you enter the white balance menu you're presented with a series of clearly labelled options, such as Daylight, Cloudy and Tungsten/Incandescent. Each of these represents a different, predetermined colour temperature. The Daylight setting, for instance,

represents a colour temperature of approximately 5,200K, while the Tungsten/Incandescent setting is fixed at around 3,200K.

Obviously, not all situations fit neatly into one of these categories. Some bulbs produce a light that's noticeably

"WHITE BALANCE SHOULD REALLY BE CALLED 'LIGHT BALANCE' AS THE SMALL ICONS YOU SEE WHEN YOU SCROLL THROUGH YOUR CAMERA'S WHITE BALANCE OPTIONS ALL REPRESENT LIGHTING CONDITIONS."

EXPLAINED: CAMERA SETTINGS

HOW TO SET WHITE BALANCE.



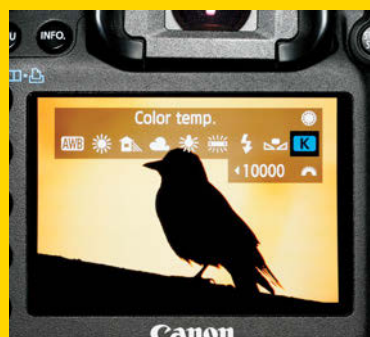
WHITE BALANCE MENU

There are several ways to access white balance options, including the camera's shooting menu, its rear control screen or by pressing the button marked WB. Typically, you have an Auto setting, a selection of presets and a custom setting.



BRACKET THE EFFECT

Some cameras enable you to fine-tune the white balance by biasing the setting towards blue, amber, green or magenta. Your camera can also be set to bracket white balance, so that it saves three or more JPEG versions of a shot.



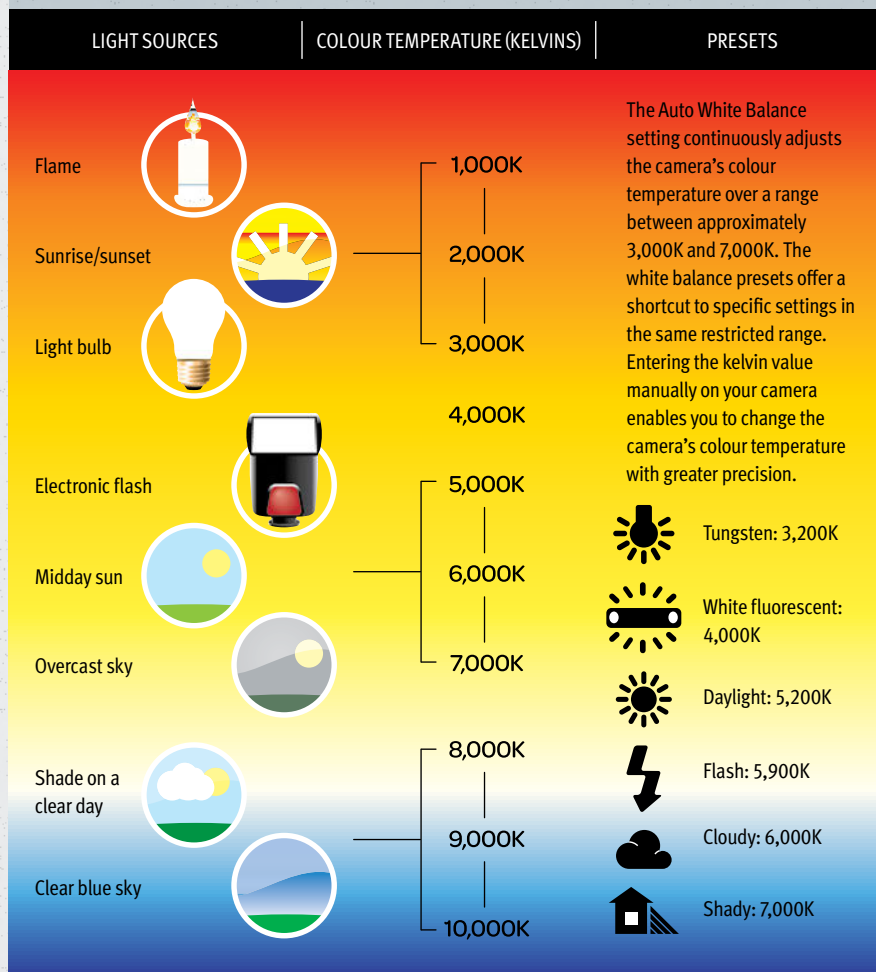
USE KELVIN FIGURES

In addition to creating a precise custom white balance, you can manually dial in a specific colour temperature in kelvins. It's easier to do this with the camera in its Live View mode, as you can check the colour of an image on the rear screen before you take a picture.

EXPLAINED: THE COLOUR TEMPERATURE SCALE

COLOUR TEMPERATURE IS ONE OF THE CRUCIAL ASPECTS OF PHOTOGRAPHIC THEORY YOU NEED TO LEARN.

Colour temperature is measured in kelvins. Light sources that have a greater proportion of red in them — candles, sunsets and incandescent bulbs, for example — have a low kelvin rating, while light sources with a greater proportion of blue — such as areas of shade on a bright day or a clear blue sky — have a higher kelvin rating. By choosing an appropriate preset in your camera's white balance menu, or entering a kelvin value directly, you can ensure pictures are free from excessive red or blue casts.



less yellow than a traditional tungsten bulb, while the colour temperature of daylight varies throughout the day. With this in mind, your camera also offers the option to dial in a kelvin colour temperature directly or to create a custom white balance.

HOW WOULD I KNOW WHICH COLOUR TEMPERATURE TO DIAL IN?

Think of it in terms of a traditional Celsius temperature scale and you won't go far wrong. The higher the kelvin value you dial in, the warmer the picture will appear. The opposite is also true, with lower kelvin values equating to colder results.

For example, if you're shooting in daylight and want a slightly warmer result, you could try

dialling in a colour temperature of 5,400 or 5,600K, instead of the Daylight preset's 5,200K.

By taking a test shot and checking the image on the rear screen, you can see whether the results are to your taste or need further adjustment. Alternatively, you can use your camera's Live View mode, which will provide a real-time preview of the white balance setting.

WHAT IS A CUSTOM WHITE BALANCE?

This feature allows you to create a white balance setting that precisely matches the lighting conditions. The way in which you create a custom setting varies between different types of camera, but the idea is the same: take a reading from a white or neutral-toned subject and create a preset white balance setting from it. This will

TECHNIQUE: INTRODUCING A COLOUR CAST

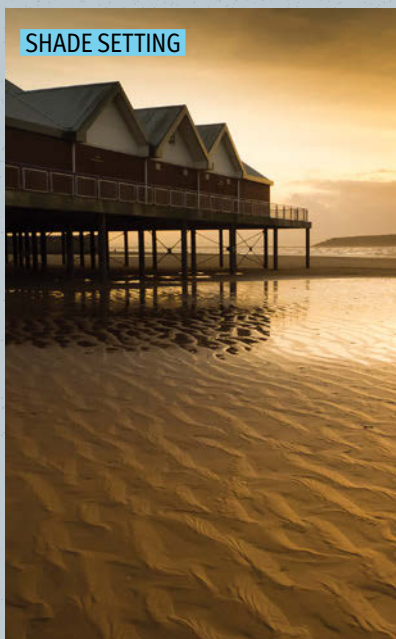
CERTAIN TYPES OF LIGHT CAN CAUSE CAMERAS TO HAVE A COLOUR CAST — BUT YOU CAN ALSO DO IT DELIBERATELY.

Auto white balance does a good job in most situations, but sometimes it can be too aggressive in its drive for pure whites. Faced with a glorious sunset or a scene bathed in golden light, it will usually attempt to tone down the warmth that you're intentionally trying to capture.

The solution here is to trick the camera into thinking it's shooting a scene that has a cooler colour temperature. By selecting the Daylight, Cloudy or Shade white balance presets, you can re-introduce progressive amounts of warmth.

You can also choose an 'incorrect' white balance for creative effect. For example, try choosing the Tungsten/Incandescent preset when you're shooting in daylight to add a blue cast, giving the image a twilight feel. If the effect is too strong, you can always enter a higher kelvin value by selecting the K option in the white balance menu.

SHADE SETTING



TUNGSTEN SETTING



give you accurate results when you're taking pictures in the same light in which you created the custom white balance.

In creating the 'perfect' neutral white balance, there's a risk that you rob a photo of some of its magic. If you're not careful, sunsets will look less vibrant and misty mornings may lose their cool character. It's for this reason, among others, that we'd always recommend saving photos as raw files rather than JPEGs.

WHAT'S SO GOOD ABOUT SHOOTING RAW?

The white balance setting is applied to an image as it's being processed, in exactly the same way that a camera's picture styles and noise reduction are applied. If you shoot JPEGs, this processing is applied by the camera and permanently embedded in the picture file that's saved to the memory card.

If you shoot raw files, the camera doesn't apply any processing; the settings used at the

time of shooting are saved alongside the picture file. This means that you can fine-tune the white balance when you convert the raw file later in special software, such as Lightroom.

You can quite easily remove a colour cast from a JPEG using an image-editing program such as Photoshop Elements, of course, but you'll be starting with a processed, compressed image. Shooting raw files, on the other hand, gives you much more flexibility and enables you to make multiple copies of the original, high-quality and uncompressed image file using various different white balance settings.

The latest versions of Lightroom and Adobe Camera Raw even enable you to make selective white balance adjustments to parts of a picture, so that you can quickly and easily blend areas that are illuminated by different light sources. ■

EXPLAINED: HOW TO CREATE A CUSTOM WHITE BALANCE

MAKING A CUSTOM SETTING WILL ENSURE YOU GET PERFECT COLOURS IN THE TRICKIEST LIGHTING. HERE'S HOW TO DO IT USING A CANON EOS SLR.



SHOOT A WHITE OBJECT

Place a white object in the same light as the subject. Ensure it fills most of the picture, then switch to manual focusing and take a photo. With a Nikon SLR, as long as you've chosen the Pre white balance option, pressing the shutter button automatically locks in the custom white balance.



OPEN THE SHOOTING MENU

Once the image is saved, press Menu and go to Custom White Balance. Select this and scroll through the images on the memory card. Once you've found the shot of the white object, press Set. The camera will use colour temperature measurements from this image to create the custom white balance setting.



CHECKING THE RESULTS

Select the custom white balance icon in the white balance menu. A test shot reveals cast-free colours and clean whites. The benefit of saving the image of the white object to a memory card is that this file can be used to set a custom white balance when processing these images in raw conversion software.



[HOME AV MASTERCLASS]

What is speaker burn-in?

AUDIOPHILES CLAIM IT TO BE NECESSARY, WHILE OTHERS REFUTE ITS VALUE. BUT WHAT IS IT, AND WHY WOULD YOU WANT TO DO IT?

[SIMON CHESTER]

I LIKE TO think that my beliefs and preferences, when it comes to the world of audio, are based more on engineering data and attempted objectivity than just hear-say. However, sometimes objectivism — that is, taking measurements and producing data — fails to create consensus on a topic; just because we can measure an effect doesn't mean that we can hear it. A prime example here is speaker 'burn-in.'

Burn-in is the belief that the drivers (the parts that make the sound) in speakers and headphones arrive stiff and inflexible from the factory, which makes them sound harsh. It's only after continued use that they loosen up and reach their peak performance. The period of time it takes for these drivers to reach their

intended state is known as the burn-in length, and some high-end manufacturers will quote recommended burn-in lengths for their speakers.

Following this line of thought, this means that those brand new expensive speakers or headphones that you only started using yesterday are but a glimmer of their true selves, and, in order to hear them in their true intended form, you need to pump sound through them for anywhere from 10 to a few hundred hours.

If you start digging through audio forums (particularly headphone forums), you'll find countless anecdotes that follow the same story arc: a new set of headphones sounded harsh, but after playing white noise (static)/pink noise

(fancy static)/audiophile album of choice (Lou Reed) through them for x hours, they opened up/sounded warmer/produced tighter bass/etc. I see this as a tremendous waste of time, and — in the case of speakers — a terrible annoyance.

But is it really a tremendous waste of time? Surely if (some) speaker manufacturers recommend it, it must be true, yes? After all, it's not like it's generating them any extra revenue. Unfortunately, it's not so easy to prove or disprove.

Scanning through the literature, I've found a few particularly well-executed tests that have, indeed, found changes in driver properties over a period of burn-in — but the changes are

miniscule; so miniscule that only those with well-trained ears are likely to notice a difference, and then only a minor one.

This is really important to note: even though burn-in appears to have a physical effect on the drivers, it's not going to have the level of effect that so many forum members purport it to. So, why do people say that it does?

Well, I think it comes down to two main reasons: unless someone has two sets of speakers or headphones — one brand new, one already burned in — there's no way for them to compare the two. They instead have to rely on a sonic memory that is days old. It's hard enough comparing two similar sounds separated by seconds, so the idea that someone can definitively say that this new sound is superior to one they heard days ago is quite a stretch.

The other reason is that your auditory system (that is, the complex processing machines that convert sound into information interpreted by your brain) will grow used to a set of speakers' or headphones' sonic signature over time. I've had headphones that sounded terrible when I first got them, but grew better (indeed, superb) over time. Burn in, surely! Nope: they were second hand. It's just that my previous headphones were quite bassy, and these were quite bright, and my brain didn't enjoy the change.

This won't stop a hoard of believers from filling up forums with anecdotes reinforcing their beliefs. And besides, what's the harm? You only defer your use of the headphones/speakers by a few days, and you may just have a better product at the end of it.

Indeed, it looks like there can be no consensus. So, let's take a look at what some of

the tests have concluded and allow you to pick your side on this endless debate.

WHAT CHANGES?

First of all, though, let's examine what happens to drivers as they are first used. The spiders (see boxout) attached to the rear of the cone are usually made of a cloth that is shaped and impregnated with a resin. As the spiders move for the first time, the epoxy cracks and becomes pliable. The idea is that the epoxy takes time to grow effortlessly pliable, and the sound will suffer until that happens. To a lesser degree, this also goes for the speaker surrounds.

Now, before I go too far down the track here, I feel that it's worth pointing out that while headphones are just small speakers with head straps, burn-in doesn't apply to all of them. As noted by Bryan Gardiner in a 2013 article covering headphone burn-in for *Wired*, the tiny armature drivers used in quality in-ear headphones just don't have the same potential for mechanical change that normal voice coil drivers do.

Indeed, as Bryan notes, Shure has been running measurements on the armature drivers in its E1 in-ear monitors since they were first launched in 1997, and the results show that the sonic signature of their test pairs hasn't changed in the nearly 20 years of on-going examination since they first rolled off the production line.

So, let's now take a look at some tests completed over the years.

TESTING FOR DIFFERENCES

Tyl Herstens at the audio enthusiast publication, *Inner Fidelity* (www.innerfidelity.com), decided to see if speaker burn-in exists

ALL THE DATA!

Data geek at heart? You can view the results (including some very pretty graphs) of the tests mentioned at:

- ★ Inner Fidelity AKG Q701 headphones test #1: www.innerfidelity.com/content/evidence-headphone-break
- ★ Inner Fidelity test #2: www.innerfidelity.com/content/break-part-deux
- ★ Audioholics speaker driver tests: www.audioholics.com/loudspeaker-design/speaker-break-in-fact-or-fiction (which, notably, includes a host of references to real engineering journals, as well as an interesting anecdote from a sound engineer).

To better understand the data, it may be a good idea to read this primer on understanding loudspeaker data: www.eminence.com/support/understanding-loudspeaker-data/

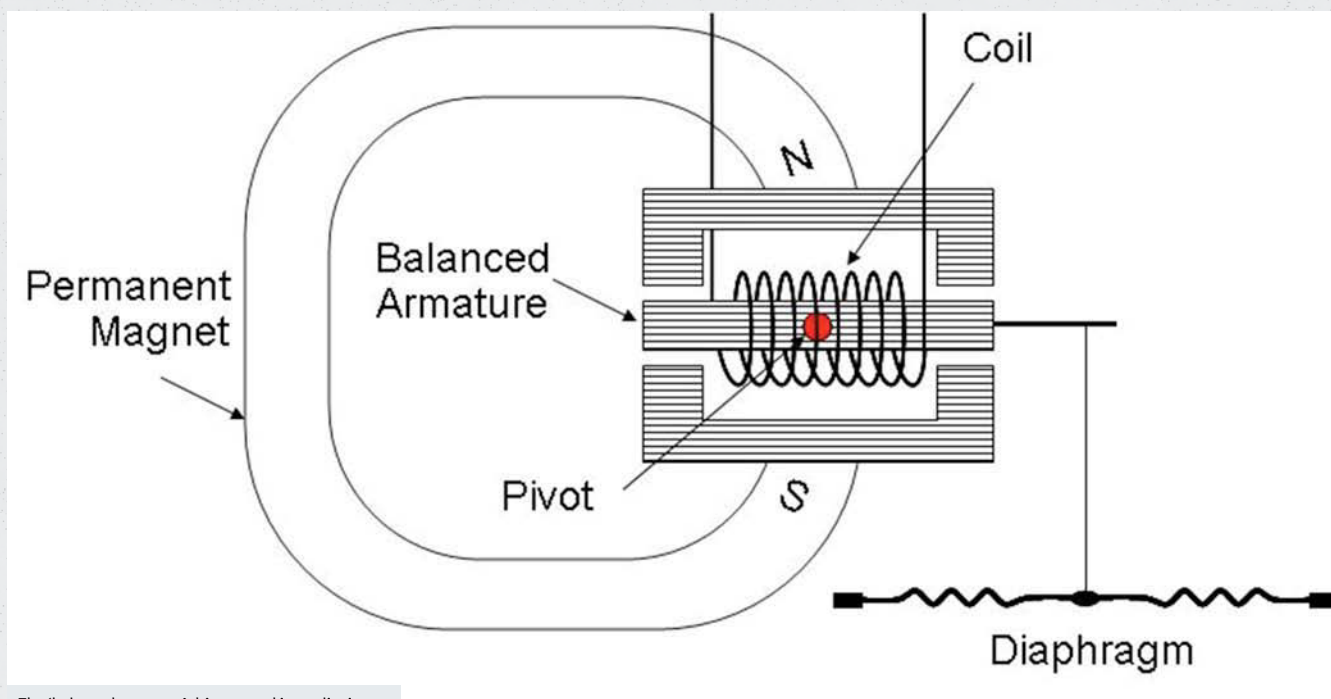
for a particular set of headphones — AKG's K701 (later rebranded as Q701; the 'Q' is for 'Quincy Jones'), which are notorious for requiring hundreds of hours of burn-in.

I really like Tyl's approach to this experiment, as well as his interpretation of the results. Better yet, he took feedback and criticism from his readers, and then integrated it into a second set of tests and measurements (luckily, he had a few sets of headphones to test). Then, finally, he ran a test not based on objective measurement, but on his response to the headphones: a blind listening test. Thorough.

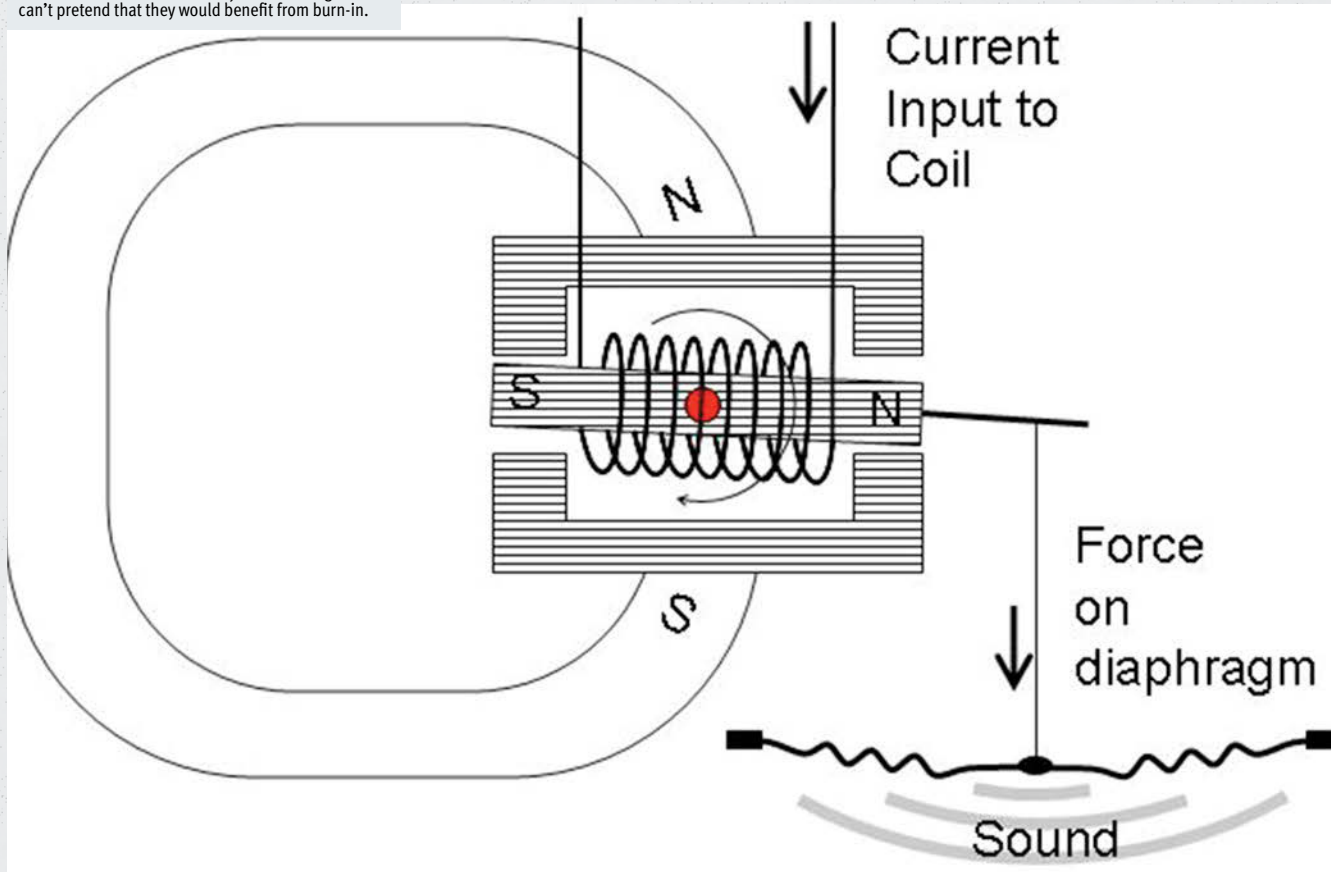
Now, while changes in the headphones' sonic signature where objectively measured, they were tiny (the differences being within a range of a half a dB). Most notably, however, differences in the headphones' sonic signatures were able to be consistently detected by Tyl's ears when he ran the blind test between brand new and burned in Q701s



The AKG Q701 (formerly K701), a headphone that is believed by many to benefit from a long period of driver burn-in.



The 'balanced armature' drivers used in quality in-ear monitors are built in such a way that even engineers can't pretend that they would benefit from burn-in.



— but Tyl himself noted that they were very subtle. So, while he found evidence that burn-in appears to exist, he still believes that most people won't notice any difference due to the burn-in effect alone. To quote:

"I think it's important to say that the K701 (and therefore the Q701) are notorious for their need of long break-in. The differences I heard, while evidently fairly obvious to me, were not large. I'm absolutely convinced that, while

break-in effects do exist, most people's expressions of headphones "changing dramatically" as a result is mostly their head adjusting and getting used to the sound."

Tyl's bevvvy of measurements were performed on a set of headphones, but do the rules change for the larger drivers in speakers?

The ever thorough Audiophlics site (www.audiopholics.com) decided to test for speaker burn in way back in 2005, and have a

thoroughly documented experiment that includes comprehensive background information — including a sane argument that speaker burn in completes very quickly (tens of seconds), and thus occurs (and completes) at the factory during the testing stages of manufacturing. To quote:

"Required break in time for the common spider-diaphragm-surround is typically on the order of 10s of seconds and is a one-off



“WHILE HE FOUND EVIDENCE THAT BURN-IN APPEARS TO EXIST, HE STILL BELIEVES THAT MOST PEOPLE WON'T NOTICE ANY DIFFERENCE DUE TO THE BURN-IN EFFECT ALONE.”

proposition, not requiring repetition. Once broken in, the driver should measure/performance as do its siblings, within usual unit-to-unit parameter tolerances.”

They ran tests with brand new drivers (as well as broken in ones) mounted in two purpose-built boxes — one vented and one sealed. In both cases, they found that the differences in mechanical compliance (stiffness) measured pre- vs. post-break in were so minor so as to be negated by the influence of the box it was mounted in. Indeed, the article provided the following conclusion:

“From the foregoing analyses, it's reasonable to conclude that suspension compliance changes arising as a consequence of initial driver burn in has little effect on the performance of a loudspeaker system.”

Perhaps the most interesting outcome,

PHYSICAL PARTS:

Drivers: these are the round parts in your speakers that produce the actual sound. They have a frame that mounts it to the cabinet, and within that is a cone (or diaphragm) that moves back and forth to make sound. The cone has a suspension system that keeps it mounted to the frame, but able to move as required, while simultaneously pulling it back to a centred, neutral position after moving.

Speaker surround: The surrounds form the part of the suspension system that connects the cone to the outer frame of the driver, plus helps centre the coil/cone assembly and allow the required back-and-forth motion. It can be made from rubber or polyester foam, or a ring of corrugated, resin coated fabric.

Spider: The 'spider' forms the part of the suspension system that attaches the cone and voice coil to the rear or the frame, and provides the majority of the centering force mentioned above. It is usually made of a corrugated fabric disk, impregnated with the stiffening resin that lies at the heart of the burn-in debate. The name comes from the shape of early suspensions, which were two concentric rings of Bakelite material, joined by six or eight curved 'legs.'

Voice coil: The part of the driver that moves back and forth with the changing magnetic field generated by the current coming from the amplifier. As it is attached to the cone, the cone moves with it, moving air and producing sound.

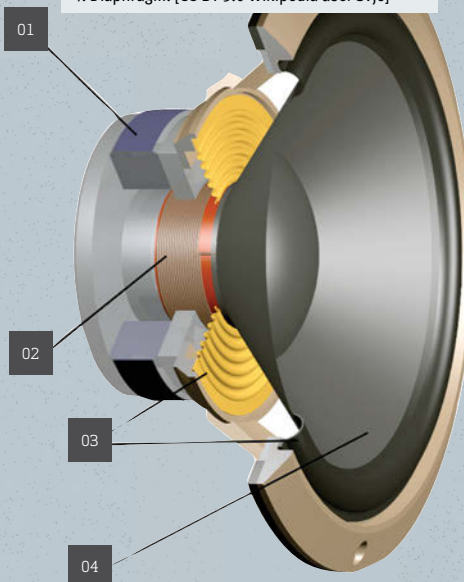
TECHNICAL MEASUREMENTS:

Amplitude response: related to the frequency response (below), but measures the tendency for the driver to amplify or attenuate a signal at a given frequency.

Frequency response: The range of frequencies (or bandwidth), expressed in hertz (Hz), that a driver or speaker can handle with specified limits of amplitude error, expressed in decibels (dB). A frequency response curve is a useful measure of the 'sonic signature' of a speaker.

Compliance: effectively the 'stiffness' of the speaker, or how freely it moves. It is what is expected to change during burn-in. It is affected by the materials used in construction and their current state of wear, the cabinet the driver is mounted in (due to the air pressure it creates), and the temperature and humidity of the surrounding air, so it's not just as simple as a mechanical measurement.

Cutaway view of a driver showing: 1. Magnet; 2. Voicecoil; 3. Suspension (including the rear spider); 4. Diaphragm. [CC-BY 3.0 Wikipedia user Svjo]



however, was that the tests showed that variances in amplitude response between individual drivers of the same model — even drivers pulled from the same manufacturing batch — were actually stronger than pre- vs. post-break in changes. In other words, it's easier to tell the difference between two drivers of the same model, pulled from the same assembly line in the same factory on the same day, than it is to tell the difference between a broken-in driver and a brand-new one. I think this translates to about as negligible effect as you could possibly imagine. Quoting again:

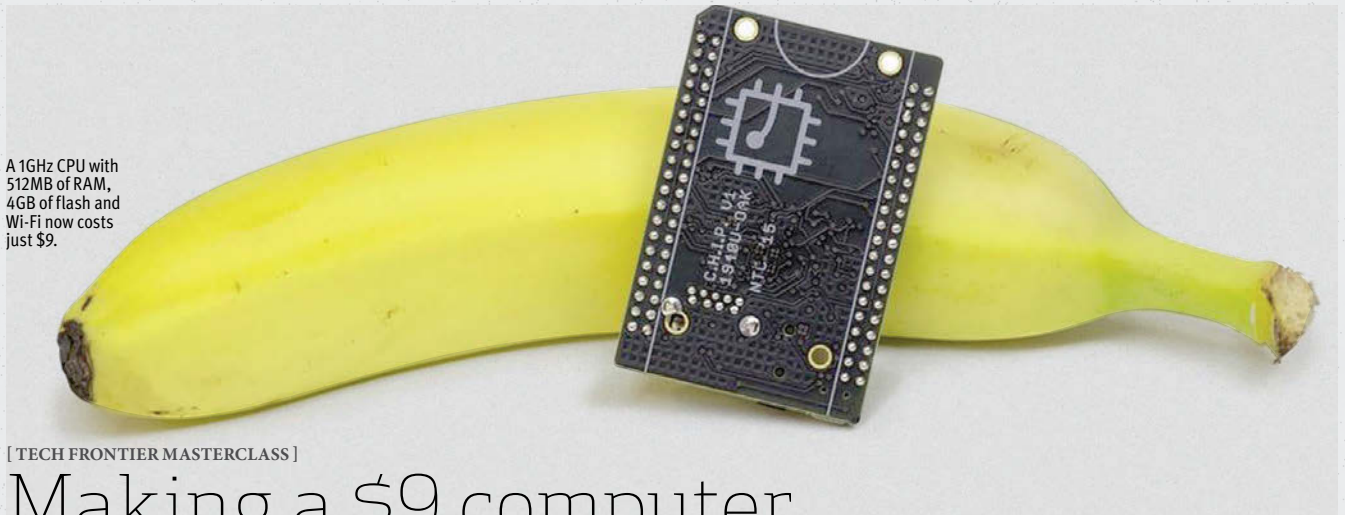
“When the test series was run to completion, the resulting amplitude response graphs indicated that an end user would likely encounter larger system-to-system amplitude response differences (~1.04 dB Spl) owing to normal driver variances than would be

encountered breaking in raw drivers.”

Indeed, if you're not fazed by the reality that even your left and right speakers will exhibit differences in their sonic signatures, how can you believe that differences even smaller in nature could change your perception after breaking them in?

So, I retain that any differences heard over the first x number of hours of use of your new speakers or headphones aren't actually due to any physical changes in the drivers, but due to your brain adjusting to a new sonic signature. But hey, if you don't mind putting off hearing your new toys for a few days, there's no harm in having them playback some fuzz for a few days — you just might look like a bit of a weirdo in doing so. ■

A 1GHz CPU with 512MB of RAM, 4GB of flash and Wi-Fi now costs just \$9.



[TECH FRONTIER MASTERCLASS]

Making a \$9 computer

A NEW COMPUTER FOR JUST \$9 WILL TAKE ON INTEL, MICROSOFT AND SAMSUNG FOR A SLICE OF THE BOOMING MAKER AND IOT MARKETS.

[DARREN YATES]

THE YEAR WAS 1999, the tech world was in the grip of the 'Y2K bug' and two computer chip makers were going at it, hammer and tongs, in the race to be first to reach the 1GHz mark. *TechLife's* previous incarnation, *PC User*, was fortunate enough to have front-row seats at this event as fierce rivals AMD and Intel kept showering our labs with samples of their latest chips, each one edging closer to the magic mark.

By early-March the following year, the first desktop computer to reach the 1GHz milestone had arrived in Australia. It was the 'Select 1000' from US computer company Gateway and at that time, it was state-of-the-art — a 1000MHz AMD Athlon processor, 128MB of memory and 34GB hard drive. It even came with a shiny new 17-inch CRT (TV tube) monitor. The price? A cool \$5,999.

Wind the clock forward 15 years and another new 1GHz computer has made its debut, this time on Kickstarter, called CHIP (tinyurl.com/onqqech). In addition to its 1GHz processor, you'll find 512MB of RAM and 4GB of on-board

flash. Unlike the Gateway Select, CHIP also packs in 802.11n Wi-Fi and Bluetooth 4.0 wireless connectivity.

Its price also finishes with a '9'. The difference is here, that '9' is the only digit.

It's taken 15 years, but a 1GHz computer has now fallen in price from \$5,999 to just \$9.

(WE'RE) ALL WINNERS

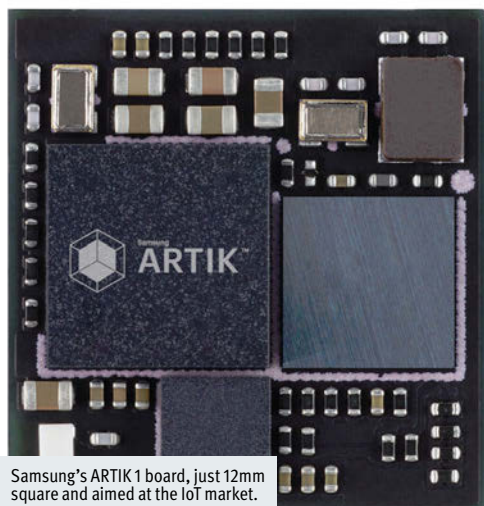
OK, that might be a stretch considering what that \$9 does and doesn't include, but it doesn't lessen the achievement. The popular Raspberry Pi revolutionised low-cost computing in 2012 with its credit-card form factor and US\$25 price tag, but CHIP clearly aims to take that to the next level. It's built around the new 1GHz R8 'system on a chip' (SoC) processor from Chinese chipmaker Allwinner and is an updated version of another chip, the single-core A13, made popular in early Android tablets from China's Shenzhen tech district. If you're not familiar with Allwinner, it's the chipmaker Hewlett-Packard has tapped on numerous occasions to

power some of its tablets, including the 7- and 8-inch G2 Android models.

Like an increasing number of chipmakers, Allwinner gets a good deal of its tech from chip designer ARM, the name behind most smartphones and tablets, Android and iOS. Still, that new R8 chip features a single-core Cortex A8 design that should push CHIP about 30-50% faster than the original Raspberry Pi.

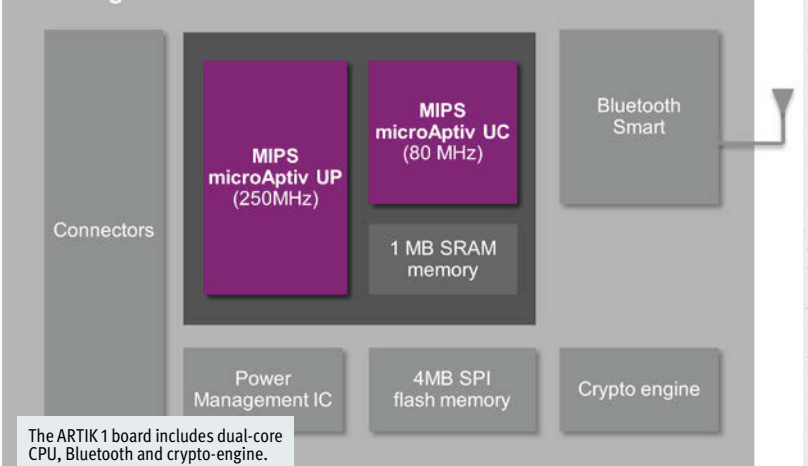
WHAT'S IT FOR?

The Raspberry Pi has been used to teach everything from coding robots to capturing images at the edge of the earth's atmosphere (tinyurl.com/pkhex6c) and if anything, CHIP has the potential to be even more versatile. For your \$9, CHIP only provides composite-video output to a monitor or TV — the Kickstarter campaign requires you to cough up another \$10 to grab a VGA adapter or another \$15 for HDMI. But unlike the Raspberry Pi and many copies since, CHIP is modular — on the one hand, you can use the \$9 computer to make

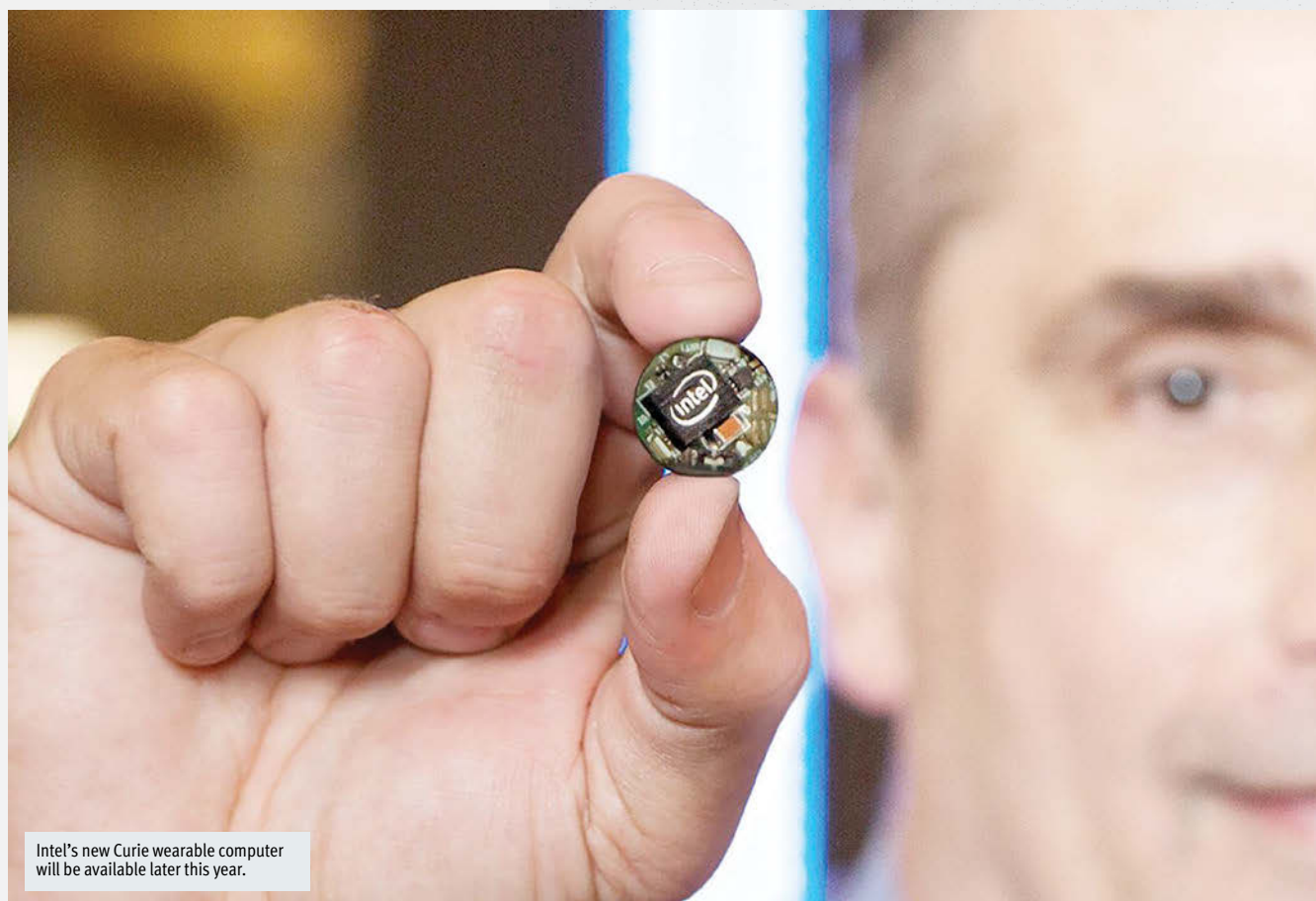


Samsung's ARTIK 1 board, just 12mm square and aimed at the IoT market.

Samsung ARTIK 1



The ARTIK 1 board includes dual-core CPU, Bluetooth and crypto-engine.



Intel's new Curie wearable computer will be available later this year.

gadgets faster and more powerful than popular 'Arduino' boards; on the other, plug in a video module and it becomes a fully-fledged Linux computer with wireless internet.

CHIP has a series of what are called 'general-purpose input-output' (GPIO) connections to add in your own electronics — sensors, LEDs, even small LCD panels. Other connections allow Lithium-polymer batteries (yes, it will charge those batteries, too). Raspberry Pi also has GPIO points, but use the Pi as a single-function computer to drive a robot or quadcopter and the extra HDMI and Ethernet ports come along for the ride unnecessarily. With CHIP, they don't, reducing its size and cost.

But its CHIP's inclusion of 802.11n Wi-Fi and Bluetooth 4.0 in that \$9 that not only makes it more versatile, it'll make CHIP ripe for use in the fast-growing market that combines the power of the internet with the ingenuity and imagination of the 'maker' community.

MEET YOUR MAKERS

Essentially, CHIP becomes another player in the booming Internet of Things (IoT) market that appeals equally to commercial engineers and home hobbyists or 'makers' alike. But while global companies continue figuring out how to connect everything from cars to washing machines to the internet, the fast-falling cost of this technology means the maker community is equally equipped to keep churning out extraordinary gadgets.

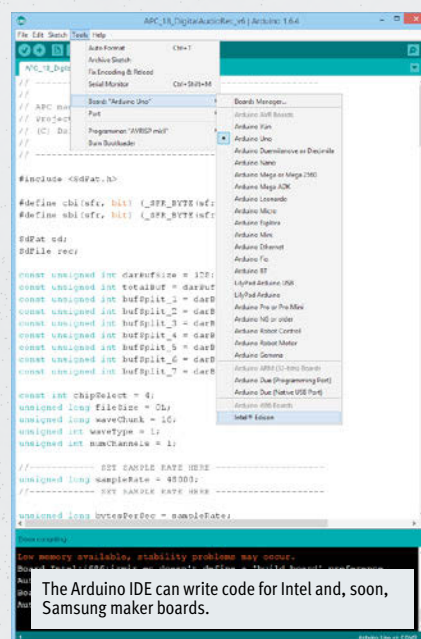
And pretty extraordinary gadgets we've seen — from the LIFX wireless LED light bulb, invented by Australian designer Phil Bosua, to Oculus Rift, the 3D head-mount display originally created by 18-year-old Palmer Luckey in his parent's garage. LIFX has since raised over US\$13 million in funding, but it's Oculus VR that has become the 'poster child' for home inventors everywhere when it sold in March 2014 to Facebook in a cash and share deal worth a cool US\$2 billion.

The local arm of market analyst firm Deloitte has produced a white paper on the rise of the maker community in Australia (tinyurl.com/p22cyh3), highlighting the benefits Australian business can gain from embracing the maker movement.

MODERN-DAY MECCANO

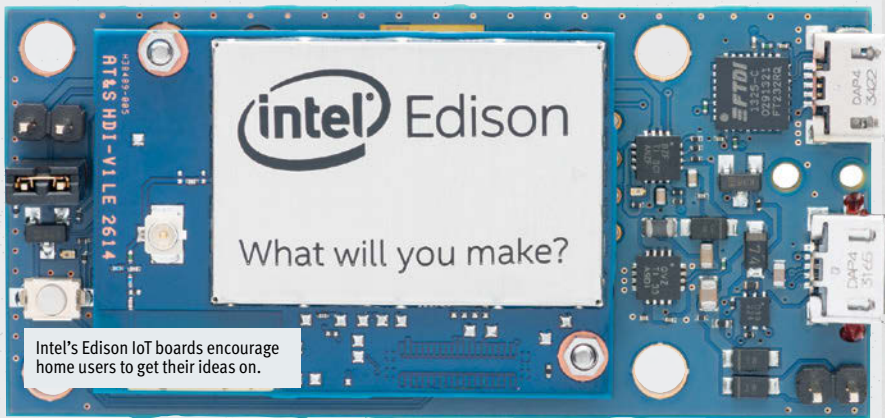
Englishman Frank Hornby's 1901-patented construction set that quickly became Meccano has taught and inspired imaginations for several generations. It's still available today, but the 21st-century digital construction set is the microcontroller, a computer chip with its own small amounts of RAM and flash storage enabling makers to create their own gadgets.

Today, Arduino is the central hub of the maker movement, using predominantly low-cost 8-bit microcontroller boards to help teach electronics engineering to a new generation of students, as well as powering everything from robots to 3D printers, quadcopters to wearables of all types.



But Arduino is continuing its move into a more-modern 32-bit processing world with the up-coming release of Arduino Zero, a compact board powered by a 72MHz Cortex M0+ microcontroller, originally from ARM — the same 'ARM' designing chips for smartphones, tablets and \$9 computers.

Still, for single-function 'embedded' applications, you can go a lot cheaper than \$9 — microcontroller boards featuring the 8-bit STM8S103 chip sell on eBay for \$1.50; easier-to-use Arduino Nano v3.0 boards for around \$3.



Intel's Edison IoT boards encourage home users to get their ideas on.

BIG-NAMES MOVE IN

While CHIP and Raspberry Pi have garnered their share of limelight, this growth in the maker/IoT community hasn't escaped the notice of technology giants. Already, global chipmaker Intel has jumped onto the bandwagon with Galileo and Edison microcomputer boards, the latter featuring a new Intel triple-core (dual 500MHz Atom/single 100MHz Quark) processor.

Earlier this year, the chip giant announced Curie (tinyurl.com/pzdkusw), a tiny 18-millimetre coat-button sized platform with Intel's first dedicated IoT chip, the 32-bit Quark SE, featuring 80KB of RAM, 384KB of flash storage, Bluetooth, sensors and power draw low enough to run from a coin battery.

But in May, Korean heavyweight Samsung decided to join the party, revealing its own ARTIK platform and following in Intel's footsteps to sign up to the Arduino-Certified program (artik.io). But although it makes its own Exynos chips that power famous products like the Galaxy S3, S4 and S6 smartphones, Samsung isn't wedded to them here. Instead, the smallest of the three ARTIK boards uses tech from yet another chip designer called MIPS Technologies. MIPS started out as a research project at Stanford University in the mid-1980s

and developed computer chip technologies that appeared in systems from Silicon Graphics and Digital Equipment Corporation (DEC).

ARTIK 1, 5, 10

The ARTIK platform has three members so far — the ARTIK 1, ARTIK 5 and ARTIK 10. The ARTIK 1 runs a dual-core MIPS microAptiv processor, one core clocking at 250MHz, the other 80MHz and is just 12-millimetres square. In that space, you get a 9-axis motion sensor with accelerometer, gyroscope and magnetometer, 1MB of RAM, 4MB of flash storage, support for 800 x 480-pixel display and Bluetooth Low-Energy (BLE) 4.0. There's even a crypto-engine for securing data.

The ARTIK 5 packs a 1GHz dual-core ARM processor with Mali-400 graphics (similar to a Galaxy S2 phone), 802.11b/g/n Wi-Fi, 512MB of RAM, 4GB of flash and H.264 video decoding into a board just 29 x 25-millimetres. The top-drawer ARTIK 10 includes Samsung's Octa core chip with 2GB of RAM, 16GB of flash storage and the ability to decode 1080p (full HD) H.264 video at up to 120 frames per second.

Aside from how it's received by the maker community, ARTIK will help Samsung achieve its own goals of having all Samsung product connected to the internet by 2020 —



LIFX, the Wi-Fi enabled light bulb, invented by Australian Phil Bosua.

everything from air purifiers to ovens (tinyurl.com/pr40paj).

MICROSOFT JOINS ARDUINO

But in a sign of just how important the Maker market is becoming, software giant Microsoft has announced its up-coming Windows 10 operating system will be heavily focused towards the maker and IoT communities. First, there'll be a free version of Windows 10 IoT Core for the recently-released Raspberry Pi 2. But further, Windows 10 has joined the 'Arduino-certified' program.

Microsoft's Arduino play comes in two parts — Windows Virtual Shield for Arduino will allow Arduino makers to patch into the hardware sensors of Windows phones such as the Lumia 530, and Windows Remote Arduino will enable software coders to add Arduino commands to their universal apps and add external hardware to their projects.

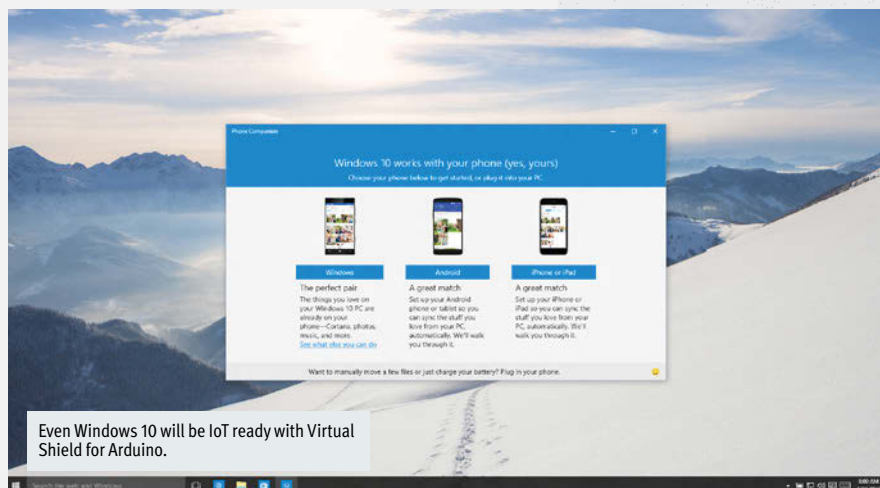
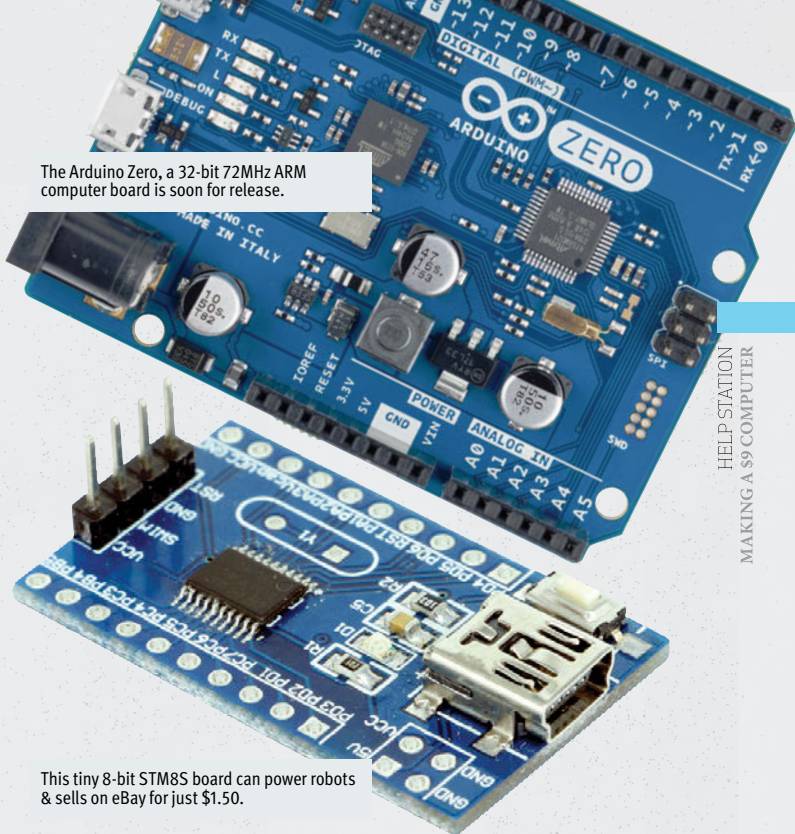
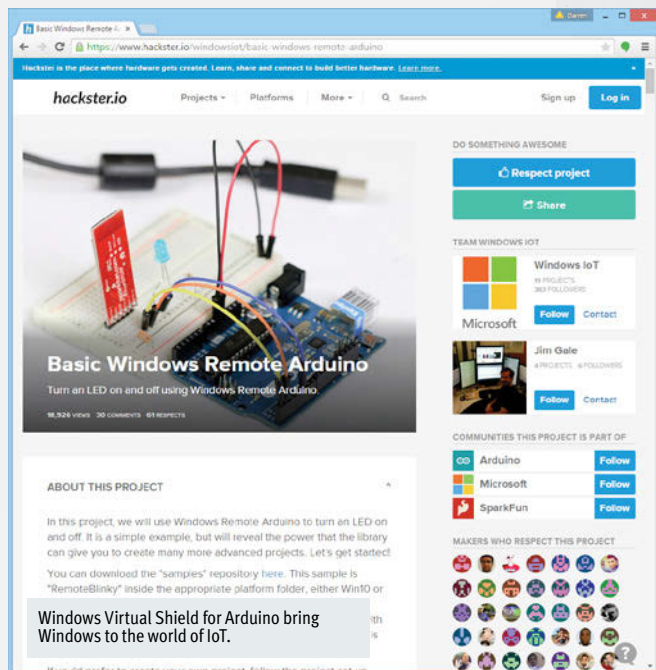
In fact, you can get started with it right now — Microsoft has released the open-source libraries to make Windows 10 and Arduino talk to each other and you can download them from ms-iot.github.io/content/win10/SetupWVSA.htm.



Windows 10 will allow you to tap your Lumia 530's sensor with Arduino.



Around for over a century, Meccano is still feeding kids' imaginations.



HOW MUCH IS IOT WORTH?

If you're thinking this global interest in all things IoT and 'maker' seems a bit overcooked, Oculus VR's US\$2 billion sale is a good counter-argument. But you can be certain the combined might of Intel, Microsoft and Samsung can smell the potential coin to be made from IoT — and the numbers are extraordinary.

In April this year, analysts at IDC forecast the market for IoT technology in just the Asia/Pacific region alone, not including Japan, will reach a staggering US\$583 billion by 2020, with the number of internet-connected 'things' topping a whopping 8.6 billion. Right now, Australia is second only to Korea as the most mature market for IoT technology in the Asia/Pacific region (tinyurl.com/qj282x5). With these numbers, you can only imagine what the US and European markets will be worth.

But with this much money in the offing, arguably the greatest surprise is the way these global tech giants are embracing the maker community with catch phrases like 'what will you make?' almost as numerous as IoT chips themselves.

FUTURE TECH — MADE BY YOU!

Why are they doing it? Because they well know another Oculus Rift could be waiting in the wings. Just as the iPhone killed off the MP3 player market, IoT spells danger and opportunity for established players in almost equal measure. It democratizes computer engineering — Oculus Rift showed that anyone with a great idea now has access to the tools, software and hardware to turn that idea into a reality.

To that end, Samsung is already working with Arduino to get ARTIK supported by the Arduino IDE (integrated development environment, tinyurl.com/3qhpzn), the app most commonly used to code Arduino boards. The Arduino IDE itself is rudimentary by modern standards and not universally loved, but its ease of use has helped it become the rallying point for the major IoT platforms, from Intel Edison and Samsung ARTIK to Arduino and lesser known but highly-regarded platforms like Teensy (pjrc.com/teensy).

During World War II, the codebreakers at MI6's famed Bletchley Park needed an

automated way of helping crack German military codes. His superiors thought he was nuts, but after many months, electrical engineer Tommy Flowers developed the world's first all-electronic programmable computer called 'Colossus' in December 1943, made from radio spare parts. He had a second upgraded computer in operation by June 1944 in time for the D-Day Landings (www.tnmoc.org/explore/colossus-gallery).

Flowers designed Colossus from scratch, one electronic component at a time. The power of today's microcontrollers not only gives you essentially the same tools corporate engineers play with, the simplified language used by the Arduino IDE means you can make your idea in a fraction of the time it used to take. Making your own tech today is far less 'Colossus' and much more 'modern-day Meccano'.

START YOUR IMAGINATION

The \$9 computer has been made possible by the relentless development of newer, faster, more power-efficient processors. And now Intel, Microsoft and Samsung are all very publicly promoting their toys to hobbyists, makers, STEM (science, technology, engineering and mathematics) students — anyone who has an idea they want to make.

But it's not all beer and skittles — there are risks with IoT. Apple co-founder Steve Wozniak thinks the IoT market has all the hallmarks of another tech bubble (tinyurl.com/ne2n65l), not to mention the potential security risk in having so many appliances and gadgets connected to the internet.

















But you can still be a maker and forget IoT — not every gadget has to connect to the internet. And the more you understand how technology works — right down to the coding level — the more in control of your tech future you'll be. ■




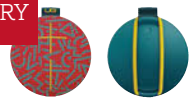




















BUYER'S GUIDE

YOUR READY RECKONER TO THE BEST TECHNOLOGY PRODUCTS

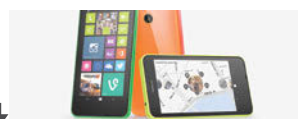


The *TechLife* team find the best budget, value and performance products, and the latest releases in the top technology categories. If you believe there are other products that deserve the title in any of the tech categories, let us know and give us your reasons why in 50 words or less. Equally, if there's a hot new product that's worthy of attention, we want to know. Send your email to techlife@futurenet.com.

NETWORKING EQUIPMENT	ADSL ROUTERS (WITH MODEM)			
				
	[BEST BUDGET] Netgear DGN2200	[BEST VALUE] TP-Link Archer D7	[BEST PERFORMANCE] ASUS DSL-AC68U	[NEW ON SHELF] Netgear Nighthawk D7000
	\$99 www.netgear.com.au It's only 802.11n, but it has the basics you need plus an excellent, easy-to-use interface.	\$170 www.tp-link.com.au The UI is a little no-frills, but once set up this is a very solid AC1900 router for a price well below the average.	\$300 www.asus.com/au It ain't cheap, but if you want it all, this 802.11ac unit is fast and packed with handy enthusiast features.	\$350 www.netgear.com.au This new release from Netgear includes all the Nighthawk R7000's great features and adds an ADSL modem as well.
NETWORKING ACCESSORIES	BROADBAND ROUTERS (NO MODEM)			
				
	[BEST BUDGET] Netgear WNR2000	[BEST VALUE] TP-Link Archer C7	[BEST PERFORMANCE] Netgear Nighthawk R7000	[NEW ON SHELF] Linksys EA8500
	\$70 www.netgear.com.au It's only 802.11n, but for around \$70 this four-port router will cover the basics.	\$150 www.tp-link.com.au This modemless version of the D7 (above) has all the basics you'll need to set up a 1,300Mbps AC network.	\$210 www.netgear.com.au If you want top speeds and premium features including great Wi-Fi range, then this is our recommendation.	\$429 www.linksys.com/au The latest 802.11ac router from Linksys adds MU-MIMO to the mix, which should mean faster speeds for all your devices.
NETWORK ATTACHED STORAGE DEVICES	NETWORKING ACCESSORIES			
				
	[BEST WIRELESS EXTENDER] Netgear EX6200 WiFi Range Extender	[BEST WIRELESS BRIDGE] Linksys WUMC710	[BEST POWERLINE ADAPTER (BUDGET)] Netcomm NP507	[BEST POWERLINE ADAPTER WITH WI-FI EXTENSION] Netcomm NP508
	\$129 www.netgear.com.au This AC extender is capable of speeds up to 867Mbps, has great range and can host storage via its USB 3.0 port.	\$140 au.linksys.com This 802.11ac bridge is a great way of linking a up to four wired network devices to a 1,300Mbps AC network.	\$140 www.netcomm.com.au These powerline plug adapters are a little big, but include socket passthrough and fantastic speeds.	\$145 www.netcomm.com.au If you want to add wireless extension onto powerline capabilities, this topped our 2.4GHz Wi-Fi speed tests.
NETWORK ATTACHED STORAGE DEVICES	NETWORKING ACCESSORIES			
				
	[BEST BUDGET] Lenovo Iomega IX2	[BEST VALUE] ASUSTOR AS-202TE	[BEST PREMIUM] Synology DS414j	[NEW ON SHELF] Thecus N5810PRO
	\$125 (DISKLESS) www.lenovo.com You'll need to BYO drives, but this very affordable two-bay NAS offers impressive features for the price.	\$295 (DISKLESS) www.asustor.com This two-bay NAS offers excellent features and can double as a media player, via XBMC and HDMI-output.	\$470 (DISKLESS) www.synology.com If you need more space, this four-bay unit runs Synology's excellent NAS OS, which lets you add features via apps.	\$1,100 www.thecus.com This high-end 5-bay NAS is for users who need top speeds and, with a Celeron CPU, plenty of horsepower.

 [BEST BUDGET] Jabra Solemate Mini \$69 www.jabra.com Squeezes Jabra's excellent Bluetooth speaker into a more portable package.	 [BEST VALUE] Creative ZiiSound D5x \$260 au.creative.com Creative's big and beautiful-sounding D5x is fantastic value, but won't be available much longer.	 [BEST PERFORMANCE] Lenco PlayLink 4 \$399 www.amberonline.com.au With an optional battery for portable play, this Bluetooth and Wi-Fi speaker is highly versatile and sounds fantastic.	 [NEW ON SHELF] UE Roll \$150 www.ultimateears.com This disc-shaped speaker's very portable and waterproof to boot. It doesn't sound half-bad either.	BLUETOOTH SPEAKERS BUYER'S GUIDE READY RECKONER
 [BEST BUDGET] Shure SRH440 \$130 www.jands.com.au Bright, clear sound and great bang for buck.	 [BEST VALUE] Audio-Technica ATH-M50X \$199 www.audio-technica.com.au A well-priced set of over-ear headphones with fantastic audio and detachable cables.	 [BEST PREMIUM] V-Moda Crossfade M-100 \$270 www.vmoda.com Warm and rich sounding cans with great clarity — these can handle anything you throw at them.	 [BEST WIRELESS] Plantronics BackBeat Pro \$300 www.plantronics.com/au This Bluetooth set of cans blew us away with their great acoustics and noise-cancelling capabilities.	MUSIC HEADPHONES
 [BEST BUDGET] Google Chromecast \$50 play.google.com Google's wireless HDMI dongle streams content to your TV via the Play Store and a variety of third-party apps.	 [BEST VALUE] Western Digital WD TV Live \$120 www.wdc.com It beats many TVs for video format support and its fast processor supports 1080p network streaming.	 [BEST PERFORMANCE] Western Digital WD TV Live Hub 1TB \$230 www.wd.com A media player done right, this unit can play and serve video to other devices. Easy to use and well-featured.	 [NEW ON SHELF] Google Nexus Player \$130 play.google.com This official Android-powered media player also includes access to apps and games.	PERSONAL & HOME AV GEAR NETWORK MEDIA PLAYERS
 [BEST BUDGET] Acer X1263 \$280 www.acer.com.au A bright DLP projector with long lamp life at a reasonable price. Perfect for presos and the odd movie.	 [BEST VALUE] Epson EB-W120 \$600 www.epson.com.au This compact 3LCD, WXGA unit has good features and image quality and decently priced lamps.	 [BEST HOME THEATRE] BenQ W1070 \$999 www.benq.com.au BenQ's latest 1080p home theatre unit boasts a lower price and longer lamp life than the W1100.	 [NEW ON SHELF] LG MiniBeam PG60 \$999 www.lg.com/au This compact and portable home-theatre projector will go anywhere, though its not high specced.	DATA PROJECTORS
 [BEST BUDGET] Samsung UA40H6400 \$900 www.samsung.com/au This 40-inch LED unit features excellent picture quality and first-rate smart TV feature.	 [BEST VALUE] Samsung UA55H7000 \$1,700 www.samsung.com/au Samsung's top-shelf 55-inch LED TV from 2014 produces great images at a nice price.	 [BEST PERFORMANCE] Samsung UA60H6400AW \$2,100 www.samsung.com/au This upper-midrange 60-inch LED has rich colours, deep blacks and great uniformity.	 [NEW ON SHELF] LG 55EC930T \$3,999 www.lg.com/au This comparatively-affordable 55-inch, 1080p OLED set promises dazzling colours and amazing contrast.	TVS
 [BEST BUDGET] Kogan Atlas X1510 \$329 www.kogan.com.au Packs Windows 8.1, Pentium CPU, 15.6-inch screen and a 500GB hard drive for a keen price.	 [BEST ULTRABOOK] Apple MacBook Air 13-inch FROM \$1,399 www.apple.com/au This thin, lightweight unit has an aluminium unibody chassis, fast CPU and is well-priced for an ultrabook.	 [BEST PERFORMANCE] ASUS G751JT \$2,499 www.asus.com/au This unashamedly huge 17-inch desktop replacement packs heaps of power and a GTX 970M GPU.	 [NEW ON SHELF] Venom BlackBook 15 (2014) \$3,399 www.venomcomputers.com.au This impressive 15.6-inch performance all-rounder packs in an Nvidia GTX 970, 3K screen and SSD + HDD.	LAPTOPS, TABLETS & SMARTPHONES LAPTOPS

SMARTPHONES
- ENTRY-LEVEL



[BEST WINDOWS]
Microsoft Lumia 635

\$180 | www.nokia.com
A simple and elegant WP8 handset with 4G. A solid entry-level choice.



[BEST BIG SCREEN]
Motorola Moto G (2014)

\$269 | www.motorola.com.au
This upgraded Moto G packs all the basics and then some; dual-SIM 3G, 5-inch 720p LCD and 8GB storage.



[BEST PERFORMANCE]
LG G2

\$449 (32GB) | www.lg.com
The G2 is basically the Nexus 5 with LG tweaks. It's sleek and fast with a 5-inch screen.



[NEW ON SHELF]
Microsoft Lumia 640XL

\$399 | www.microsoft.com
Offering a 5.7-inch screen, 13MP camera and 3,000mAh battery this big Windows Phone is equally big value.

SMARTPHONES
- PREMIUM



[BEST BUDGET]
Motorola Moto X (2014)

\$550 (16GB) | www.motorola.com/au
An excellent 5.2-inch all-rounder with frequent OS updates. Shop around for the best price.



[BEST BIG SCREEN]
Samsung Galaxy Note 4

\$949 | www.samsung.com/au
The latest Note keeps the stylus and 5.7-inch screen, but upgrades the CPU and GPU to match the latest iPhones.



[BEST PREMIUM]
Apple iPhone 6

From \$869 | www.apple.com/au
The new iPhone is slimmer, curvier and faster than ever and a great reason to stick with (or reconsider joining) the Apple team.



[NEW ON SHELF]
LG G4

From \$869 | www.lg.com/au
The new LG flagship phablet includes a stunning 5.5-inch display and optional leather back.

TABLETS
- ENTRY-LEVEL

LAPTOPS, TABLETS & SMARTPHONES



[BEST BUDGET]
Samsung Galaxy Tab 4 8.0

\$240 (16GB) | www.samsung.com/au
It's getting a little long in the tooth, but this 8-inch quad-core Android tablet is our current budget pick.



[BEST COMPACT]
Apple iPad mini 2

\$369 (16GB) | www.apple.com/au
With a Retina display, the iPad mini 2 is fantastic value if you want a small tablet with all the frills.



[BEST PERFORMANCE]
Apple iPad Air

\$499 | www.apple.com/au
This iPad recently saw a \$100 price drop, which makes it the best-performing tablet under \$500.



[NEW ON SHELF]
Microsoft Surface 3

\$699 (64GB) | www.microsoft.com
A lower-end, Intel Atom-powered alternative to the Surface Pro, but still runs the full version of Windows.

TABLETS
- PREMIUM



[BEST BUDGET]
Apple iPad Air

\$499 | www.apple.com/au
If the budget doesn't extend to an Air 2, this 2013 unit is still very competitive with the latest Androids.



[BEST VERSATILITY]
Microsoft Surface Pro 3

\$1,130 | www.microsoft.com.au
The official Windows 8.1 Pro tablet has a stylus and runs traditional Windows software.



[BEST PERFORMANCE]
Apple iPad Air 2

From \$619 | www.apple.com/au
The second-gen iPad Air goes even slimmer and lighter than before and has unbelievably fast internals.



[NEW ON SHELF]
Google Nexus 9

From \$479 | play.google.com
Google's new premium 8.9-inch tablet runs Android 5.0 and is designed by HTC.

BLUETOOTH TABLET
KEYBOARDS

GADGETS & ACCESSORIES



[BEST FOR IPAD 2/3/4]
Logitech Keyboard Case for iPad

\$90 | www.logitech.com
Offers good protection and comfy, responsive keys on a budget.



[BEST FOR IPAD AIR]
Belkin QODE Slim Keyboard Case

\$110 | www.belkin.com/au
A great keyboard and vibrant case with a kickstand make this a great option for iPad Air.



[BEST FOR IPAD MINI]
Logitech Ultrathin Keyboard Cover

\$90 | www.logitech.com
The Ultrathin combines a fantastic-quality keyboard with a metal-backed case.



[BEST FULL-SIZED KEYBOARD]
Logitech Tablet Keyboard

\$120 | www.logitech.com
If you want the full-sized typing experience, this is your best bet.

DIGITAL
CAMERAS



[BEST BUDGET]
Nikon CoolPix S3300

\$150 | www.nikon.com.au
This compact camera is available in eight colours and has an ultra-slim body with 6x wide-angle lens.



[BEST COMPACT SLR]
Olympus OM-D E-M10

\$1,100 | www.olympus.com.au
A MILC with lots of lenses, fast shooting and a high-res viewfinder at a great price.











[BEST DIGITAL SLR]
Sony Alpha SLT-A65

\$1,110 | www.sony.com.au
A fantastic prosumer camera that lives up to its great specs.



[NEW ON SHELF]
Samsung NX1

\$2,200 | www.samsung.com/au
Samsung's new MILC is turning heads thanks to some first-rate lenses, great image quality and 4K video capabilities.

↓	 <p>[BEST POWER BANK] TP-Link TL-PB10400</p> <p>\$50 www.tp-link.com.au This 10,400mAh power bank will let you recharge your smartphone or tablet anywhere and weighs just 241g.</p>	 <p>[BEST WIRELESS HARD DRIVE] WD My Passport Wireless 2TB</p> <p>\$330 www.wd.com Take your media collection with you and play it back from Android and iOS devices with this Wi-Fi hard drive.</p>	 <p>[BEST STYLUS] Adonit Jot Pro</p> <p>\$45 www.adonit.net This one's great for scribbling notes on Android and iOS tablets and doesn't cost the Earth.</p>	 <p>[BEST MOBILE GAMEPAD] iPega PG-9025</p> <p>~\$25 www.dx.com You'll need to buy it online, but this gamepad is nice and responsive and works with both iOS and Android.</p>	↓	TABLET & SMARTPHONE ACCESSORIES BUYER'S GUIDE READY RECKONER
	 <p>[BEST BUDGET] Toshiba Canvio Basics 1TB</p> <p>\$90 www.toshiba.com A compact portable hard drive with USB 2.0, 3.0 and backward compatibility.</p>	 <p>[BEST VALUE] Western Digital My Passport Ultra 2TB</p> <p>\$149 www.wd.com Great value, with lots of storage, good software and USB 3.0 support.</p>	 <p>[BEST PERFORMANCE] Seagate Backup Plus Fast 4TB</p> <p>\$400 www.seagate.com This speedy USB 3.0 drive transfers data at up to 220MB/s — twice as fast as most others.</p>	 <p>[NEW ON SHELF] Western Digital My Passport Pro 4TB</p> <p>\$650 www.wd.com This RAIDed unit is speedy, but only works with Thunderbolt-enabled PCs and Macs.</p>		
	 <p>[BEST SMARTWATCH FOR ANDROID] LG G Watch R</p> <p>\$349 play.google.com/devices The G Watch R runs Android Wear and, best of all, it actually looks like a watch.</p>	 <p>[BEST SMARTWATCH FOR IOS] Pebble Steel</p> <p>\$289 getpebble.com Pebble's steel watch has an e-paper screen so its battery lasts a week, and it works with both Android and iOS.</p>	 <p>[BEST FITNESS BAND] Jawbone UP24</p> <p>\$165 www.jawbone.com The UP24 is our pic for fitness tracking; it monitors steps and sleep and puts it all together in a great social app.</p>	 <p>[BEST EXERCISE HEADPHONES] Jabra Sport Pulse Wireless</p> <p>\$250 www.jabra.com These in-ear buds connect to your phone via Bluetooth and have integrated heart-rate monitoring.</p>		
	 <p>[BEST BUDGET] Dell S2340L</p> <p>\$230 www.dell.com.au A solid all-rounder, this 23-inch IPS display has deep colours and a nice narrow bezel.</p>	 <p>[BEST VALUE] Dell P2714H</p> <p>\$440 www.dell.com.au This quality 27-inch IPS unit has a resolution of 1,920 x 1,080 with an aspect ratio of 16:9.</p>	 <p>[BEST PERFORMANCE] ASUS PG278Q</p> <p>\$999 www.asus.com/au If you're looking for the best PC gaming display right now, there's no better than this 27-inch G-sync monitor.</p>	 <p>[NEW ON SHELF] AOC U2868PQ</p> <p>\$640 www.aocmonitor.com AOC's 28-inch TN panel at 3,840 x 2,160 is the cheapest 4K we've yet tested and great bang for buck.</p>		
	 <p>[BEST BUDGET] Tt eSports Poseidon ZX</p> <p>\$99 au.ttesports.com This basic compact board still has it where it counts, with solid performance and comfortable keys.</p>	 <p>[BEST VALUE] Logitech G710+</p> <p>\$130 www.logitech.com This brown switched mechanical gaming keyboard is comparatively quiet and has great key feel.</p>	 <p>[BEST PREMIUM] Corsair Vengeance K95 RGB</p> <p>\$230 www.corsair.com Available in multiple switch colours, the K95's backlighting can be customised in almost any shade.</p>	 <p>[NEW ON SHELF] Razer BlackWidow Chroma</p> <p>\$210 www.razerzone.com Razer's joined the multi-coloured LED club, upgrading its BlackWidow with rainbow-coloured backlighting.</p>		PC PERIPHERALS GAMING KEYBOARDS
	 <p>[BEST BUDGET] Microsoft LifeChat LX-3000</p> <p>\$35 www.microsoft.com.au/hardware A cheap basic USB headset with noise-cancelling tech.</p>	 <p>[BEST VALUE] SteelSeries Siberia V2</p> <p>\$80 www.steelseries.com Luxurious with great sound and a brilliant retractable microphone.</p>	 <p>[BEST PERFORMANCE] Audio-Technica ATH-AG1</p> <p>\$349 www.audio-technica.com.au A super-comfy headset with massive drivers and fantastic sound.</p>	 <p>[NEW ON SHELF] Kingston HyperX Cloud II</p> <p>\$160 www.kingston.com These affordably-priced cans sound great across games, music and movies.</p>		

			
[BEST BUDGET] Logitech G402 Hyperion Fury	[BEST VALUE] SteelSeries Sensei RAW	[BEST PERFORMANCE] Razer Taipan	[NEW ON SHELF] Logitech G502 Proteus Core
\$49 www.logitech.com A hybrid-sensor gaming mouse with optical, gyro and accelerometer tracking, this one doesn't skip a beat.	\$70 www.steelseries.com This cut-down version lacks frills, but gets the basics right with great performance.	\$80 au.razerzone.com A super-high-resolution gaming mouse that's actually comfortable to use.	\$80 www.logitech.com This surprisingly affordable new optical mouse from Logitech offers great tunability.
			
[BEST BUDGET] Brother HL-L2340DW	[BEST VALUE] HP Officejet Pro 6830	[BEST PHOTO PRINTER] Epson Expression XP-720	[NEW ON SHELF] Epson WorkForce Pro WP-4540
\$110 brother.com.au It's black and white only, but with Wi-Fi and great text print quality alignment, very fast print speeds and cheap to run.	\$180 www.epson.com.au A great all-rounder that's up for both photo-printing and text documents.	\$210 www.epson.com.au Creates fantastic-quality photo prints at a relatively affordable price.	\$449 www.epson.com.au Requires manual print head alignment, but very fast print speeds and cheap to run.
			
[BEST BUDGET] Sapphire Dual-X Radeon R7 265	[BEST VALUE] Sapphire SA-R9270X-2GD5-OC	[BEST PREMIUM] Gigabyte GV-N970WF30C-4GD	[BEST EXTREME] MSI GTX-980-4GD5
\$190 www.sapphiretech.com This beats the similarly-priced GTX 750 Ti from Nvidia for value and speed.	\$240 www.sapphiretech.com This mid-range card from AMD can run most games with all the bells and whistles at 1080p.	\$490 www.gigabyte.com.au If your budget stretches to around \$500, this new GeForce is extremely fast and great value.	\$780 au.msi.com This top-tier card from MSI and Nvidia is super speedy and what we'd select if money is no object.
			
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